REPLACING HARMFUL SYNTHETIC DYES WITH NATURAL DYE

Authors: Tanuka Sinha, Shikha Yadav

INTRODUCTION:-

The art of dyeing has an important role in adding beauty to the textiles. Synthetic and natural dyes are used for dyeing fabrics. Due to the carcinogenic nature and other harmful effects of synthetic dyes, the green minded consumers are back to natural dyes as they are non-hazardous, biodegradable and have better compatibility with the environment. Natural dyes can be made using marigold flower. This extracted dye can be used for dyeing using metal salts as mordants.

COMPARISON OF VARIOUS MORDANTS AT A GLANCE:-

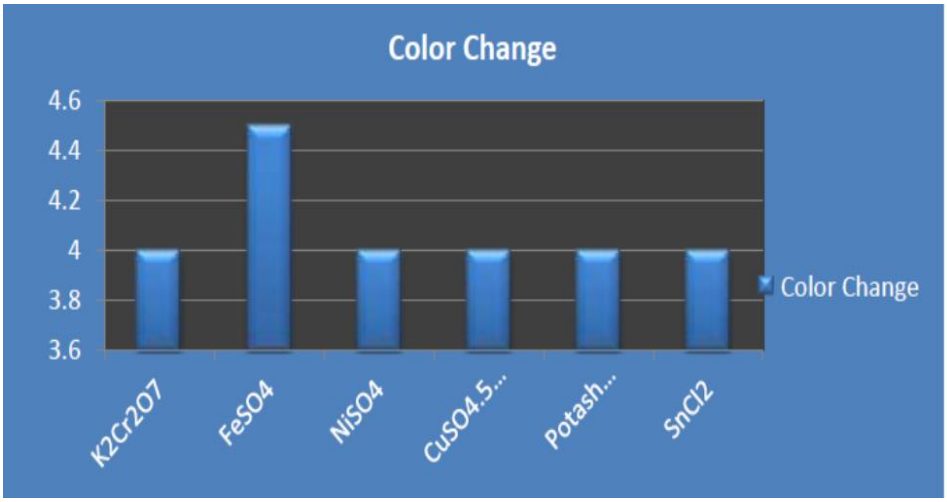
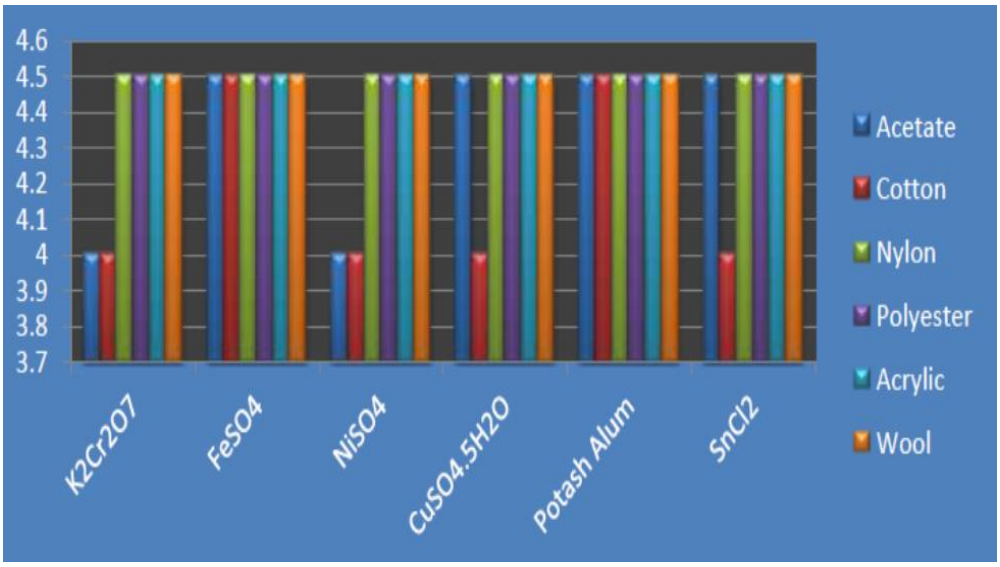


FIG-1: COLOR CHANGE TO ALKALINE PERSPIRATION

FIG- 2: COLOR CHANGE GRADING TO FASTNESS OF WATER



FIG– 3: COLOR CHANGE GRADING TO ACIDIC PERSPIRATION FASTNESS

By comparing all the above parameters **Potash Alum and $FeSO_4$** were used as the mordant for the test cloth material.

GLIMPSES OF THE EXPERIMENT:-

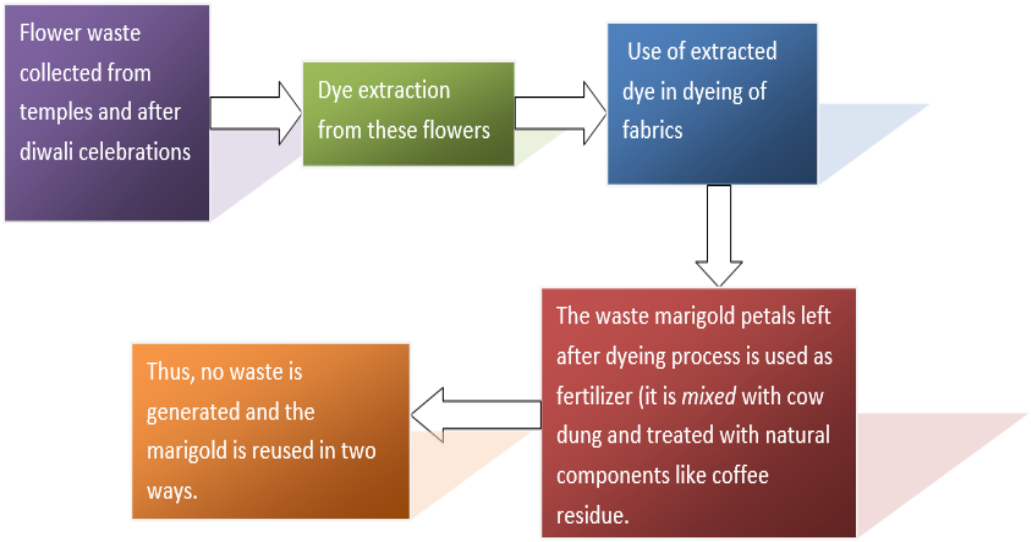
Dye cloth with ferrous sulphate as mordant

Dye cloth with Potash alum as mordant

INNOVATIVE IDEAS:-

- A BEST OUT OF WASTE MODEL – The marigold flowers that are used in making garlands or are offered at temples have to be discarded when they dry. So, making a dye using these dried flowers can be a unique utilization of the waste.
- COST – As used marigold flowers are employed in dye extraction, therefore it does not add to the cost of production of dye.

- No waste is generated in the dyeing process, complete utilization of all the raw materials involved takes place.



ADVANTAGES:-

- Minimal environmental impact
- Renewable
- Self-mordant
- Colour pay off
- Safe
- Antimicrobial effect
- Shielding properties

CONCLUSION:-

The optimized extraction conditions for dying from the observation above are M:L ratio is taken to be 1:20 for 90 min at 100 ºC . While the most suitable optimized dyeing parameters are M:L ratio is taken to be 1:30 for 1 h at 90 ºc with salt concentration of 60 g/L Na_2SO_4 is appropriate for dyeing process. The experiment is precisely performed by taking FeSO4 and Potash alum as mordant as they give good colour fastening properties than other compounds like $CuSO_4$, $SnCl_2$ etc. Both the mordants used give an appropriately dyed fabric. This dyeing process turns out to be very economical and poses not such harm to the environment.