

## Natural colorants in textile dyeing – New interpretation of an old concept



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**Form of Presentation**

- Poster
- Presentation

**Short Description** (maximum 2500 characters)

Natural colorants have been used for thousands of years to dye clothing. Being lost for more than 100 years due to the invention of synthetic dyes, there is growing interest in transfer of traditional dyeing recipes into modern textile dyehouses. This requires a new interpretation of of natural colorant application.

Resources balances and emissions have to be considered, the dyeing techniques have to be adapted on modern dyehouse equipment and the product has to meet quality limits of today.

Applicants of natural colorants will have to consider these aspects:

- By-products of plant material processing industry e.g. for food industry, timber and beverage will represent the main source of natural colorants. Direct farming of natural colorants will add only a smaller share of distinct plant colours, which is not available form other sources e.g. wastes from vegetable processing.
- Extraction of the colorant has to be performed by maintaining strict limits for resources consumption e.g. energy, water and chemicals. This indirectly limits the colour gamut available, as for some dyes in-acceptably high resources consumption prevents their extensive use for purposes of textile dyeing. However such dyes still might be of interest for applications in cosmetics.
- Plant extraction should be performed at the site of harvesting to avoid long distance transportation of huge amounts of plant material. Textile dyers also favour concentrated plant extracts, as they try to avoid storage and handling of plant material and already are used to handle concentrated dyestuff formulations.
- The application techniques have to be fitted on existing equipment and processes, and should be comparable in length to processes with used at present. Intermediate storage of dyebaths will not be accepted by the dyers. A complex set of waste water limits has to be fulfilled, thus copper, tin and chromium based mordants will be excluded.

As a result of a more than 10 year research work in cooperation with the Institute of Applied Ecology Vienna and numerous partners from industry and agriculture the potential of natural colorants in Austria was re-assessed and a new concept for

re-integration of natural colorants was designed. The new concept of natural dyes for textile dyeing purposes integrates aspects of by-product use from plant processing industry, resources balances and also modern textile dyeing techniques. Implementation of full scale technical textile dyeing is in progress.