

***A Compendium of Philippine Natural  
Dye-Yielding Plants and their Extraction  
and Textile Application Technologies***

# ***Gampol***

**Volume II**

**JULIUS L. LEAÑO, JR**

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Dye-Yielding Plants and their  
Extraction and Textile Application Technologies*

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Julius L. Leaño Jr.



**PHILIPPINE TEXTILE RESEARCH INSTITUTE**  
Department of Science and Technology

*About the cover: Indigofera tinctoria in its flowering stage.*

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**Philippine Textile Research Institute**

Department of Science and Technology

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## FOREWORD

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Trends in production and product development have greatly been influenced by the pivotal shift towards the use of green technologies. Environment-friendly processes, native products and crafts from indigenous materials coupled with a revival of the interest on how natural sources define the color spectrum gave birth to the renewed appreciation and interest on natural dyes.

Through the years, the Philippine Textile Research Institute (PTRI), an agency of the Department of Science and Technology (DOST) remains as one of the most aggressive and productive institutions undertaking natural dyes research and development (R&D). The Natural Dye Research and Development Program (NDRDP) which serves as the blueprint of the Institute's R&D work, provides direction towards the ultimate delivery of the needed intervention to micro, small and medium enterprises (MSME's) engaged in product and market niche development.

*Gampol*, Volume I published in 2003 infused momentum to the study and utilization of natural dyes for textiles and documented the achievements then. It was PTRI's way of sustaining the advocacy for potential adopters/producers and enthusiasts. Since its publication, it has become the ultimate guide on the use of natural dyes by weavers, dyers and gift, toys and housewares (GTH) producers. It has likewise served as the window of the PTRI-developed technologies on natural dye extraction and crude extract application and has become an agronomic guide to the natural dye yielding botanicals in the Philippines. PTRI's dedication to sustain these efforts resulted to the packaging of the second volume of *Gampol*.

In this 2<sup>nd</sup> volume, the advancement on natural dyeing geared towards powder production and application serves as its highlight. The need to achieve cost-efficiency and consistency in the natural dyeing processes inspired the efforts to produce powdered natural dyes which are more versatile, easier to transport and store and with considerably longer shelf life.

The second volume also includes 40 new plant dye sources in addition to the 35 listed in Volume I. In addition, optimized natural dye powder production technologies and natural dye powder application techniques have been included. For better appreciation and understanding of the technical aspects of natural dyes and natural dyeing, an overview of the chemistry of natural dyes together with some characterization of the dye powders produced and studied are likewise presented. These new information is envisioned to provide a link between what students learn and master in school and their practical use, application and relevance in actual dyeing.

Hopefully, this compendium will provide more relevant and significant ideas to its readers as it ushers them to the colorful world of natural dyes.

**CARLOS C. TOMBOC, *Ph.D.***  
Director IV

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*Julius L. Leaño Jr.*

The developed natural dye technologies which are significant components of this book are products of the collective research and development work of the men and women of the

**Philippine Textile Research Institute's**

***Natural Dye Group***

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This book also contains some of the offshoots of the collaboration of PTRI and various indigenous communities all over the Philippines, whose love, care and respect for nature are what the revival of natural dyeing as a craft and an industry are all about.



### *About the Book*

This book is a sequel to the first volume which previously featured 35 dye-yielding plants. Gampol Volume II showcases an additional 40 Philippine dye-yielding botanicals whose technology in the extraction and its application to textiles were established by PTRI. It highlights the dye powder production technologies using these natural sources and the other related technologies in the extraction of colorants and its application to various materials. To compliment these technologies for the benefit of researchers, dyers, colorists and artists alike it also features a brief run through the chemistry of natural dye industry in the Philippines and a feature on natural dyes in a cosmopolitan perspective.

The Volume II of Gampol embodies the collective research and development work on natural dyes and its relevance in the Philippines S&T agenda of supporting micro, small and medium enterprises (MSMEs) obtain a share of the growing market for eco-friendly and organic products in the world.



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