

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

**MAJOR PROGRAMS AND PROJECTS FOR CY 2023**

Program/Project Title	Brief Description of the Project	Beneficiaries	Project Duration	Project Cost (P'000)	Source of Fund	Status
<b>SUSTAINABLE TEXTILE MATERIALS AND COLORANTS R&amp;D PROGRAM</b>						
Evaluation of Bakong ( <i>Hanguana malayana</i> ) as a Textile Material	This project aims to verify and establish fiber-to-yarn technology for raw Bakong fibers using the DOST-PTRI's fiber treatment and spinning facility. The data which will be generated will encompass the whole of the textile value chain from material source all the way to apparel manufacturing.	<ul style="list-style-type: none"> <li>Farmers/farming communities</li> <li>Handloom weaving communities</li> <li>Fashion design industries</li> </ul>	Jan-Dec 2023		GAA	new
Field Verification of New PTRI Bivoltine F1 <i>Bombyx mori</i> Silkworm Hybrids in Northern Mindanao-Year 2	The study shall validate the considerations of four (4) new hybrid crosses to be included in PTRI's list of commercial hybrids for the silk production activities of partner stakeholders. The procedure of validation is accomplished through simultaneous rearing cycles in five (5) different locations of varying elevations and implementations of DOST-PTRI's package of technology.	<ul style="list-style-type: none"> <li>Silkworm growers</li> <li>Silk cocoon producers</li> <li>Handloom weavers</li> </ul>	Jan 2022-Dec 2023		GAA	ongoing
Multi-Location Transcriptomic Analysis of Philippine Reared Silkworms	This study serves as the continuation of the genetic characterization of Philippine-reared silkworms. It will continue the study on the application of transcriptomes in Philippine-reared silkworms, especially the potential hybrids, transcripts from the silk glands of pure potential strains and their hybrids as influenced by season and location (e.g. elevation, local climate, rainfall, moriculture factors).	<ul style="list-style-type: none"> <li>PTRI Technology Center, Misamis Oriental</li> <li>DOST-CAR, Benguet</li> </ul>	Jan-Dec 2023		GAA	deferred as of June 2023 due to project prioritization
Bio-coloration of Lignocellulosic Textiles using Red Colorants from Microbial Sources	This project focuses on the optimization of the process parameters for bio-colorant dyeing of lignocellulosic textiles with red dyes derived from microbial sources. Direct bio-coloration dyeing and bio-colorants suspension dyeing will be explored further to discover the best dyeing procedure for microbial colorants. Furthermore, the functional qualities of the bio-colored textile, such as UV blocking and antibacterial properties will be tested. The utilization of biotechnological approach for natural dyes and colorant production will support the sustainability of the NatDyes supply chain.	<ul style="list-style-type: none"> <li>Colors and pigments sector</li> <li>Academic institutions</li> <li>Designers</li> <li>Artisan</li> <li>SMEs</li> </ul>	Jan-Dec 2023		GAA	new

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<b>TEXTILE MATERIAL AND DESIGN INNOVATION R&amp;D PROGRAM</b>						
Geotextile Grid from the By-Products of Abaca ( <i>Musa textilis Nee</i> ) Industry	This study focuses on the utilization of abaca by-product textile fiber for geotextile applications. Geotextiles that will be developed shall undergo testing and characterization based on ASTM and ISO standards to determine their performance based on existing DPWH standards on geotextile specifications such as waterproofing material, stress-relieving membrane for pavement, erosion mitigation, and surface drainage structures, among others. The project will also explore and develop community-scale twining machine for residual fiber wastes and tuxy waste fibers from abaca.	<ul style="list-style-type: none"> <li>Abaca farmers</li> <li>Farmers-cooperatives</li> </ul>	Jan-Dec 2023		GAA	new
Semi-Worsted High Natural Textile Fiber Compact Warping Yarns	This study shall develop and establish a suitable warp yarn from lignocellulosic or cellulosic-based material using the semi-worsted (long staple) spinning system employing the compact spinning method. Developed yarns will be applied in the conversion of fabric using a handloom and power loom woven for light to heavy fabrics suitable for apparel and home textiles	<ul style="list-style-type: none"> <li>Pineapple farmers</li> <li>Handloom weavers</li> </ul>	Jan-Dec 2023		GAA	new
Pilot Scale Verification of Banana/Wool Blended Yarns	This project aims to verify in the pilot-scale level the process technology of producing banana-wool blended yarns using the semi-worsted spinning system	<ul style="list-style-type: none"> <li>Banana farmers and fiber producers</li> <li>Sheep farmers</li> <li>Designers</li> </ul>	Jan-Dec 2023		GAA	new
<b>SMART TEXTILES R&amp;D PROGRAM</b>						
Graphene-Based Natural Abaca Fiber Nonwoven Textile for Wearable Armor	This project aims to investigate the coating graphene materials such as graphene oxide to natural abaca fiber nonwoven textile to improve mechanical and interfacial properties.	<ul style="list-style-type: none"> <li>Uniformed personnel</li> <li>Firefighters and other emergency responders</li> </ul>	Jan-Dec 2023		GAA	new
Flame Retardant Finishing Technology for Natural Fiber Blended Fabrics	This project is composed of two (2) studies. Study 1, commercially available flame retardant will be used to apply to the developed natural textile fiber blended fabrics. This will investigate the compatibility of commercially available flame retardant finishing to the Philippine natural textile fiber blended fabrics.	<ul style="list-style-type: none"> <li>Local clothing manufacturers</li> <li>Local bag and shoe manufacturers</li> <li>MSMEs</li> <li>Fiber producing communities</li> </ul>	Jan-Dec 2023		GAA	new

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Lignin-Reinforced Meltspun Polyactic Acid for Filament Yarn Application	<p>Study 2 will delve on the development of plant-based extract water repellent finishing such as lignin, silicate, other minerals and mineral salts to increase the flame retardant qualities of cellulosic and non-cellulosic materials. This will lead for the development of sustainable, economic, and eco-friendly composite materials for home textile applications.</p> <p>The project aims to develop lignin-PLA polymer blends with improved mechanical and UV barrier performance where the lignin to be used will be derived from the spent liquor of <i>Musa sp</i> pseudostem textile fibers and pineapple (<i>Ananas comosus</i>) leaf textile fibers. Graft polymerization technique and crosslinking of e-beam irradiated lignin will be explored to achieve uniform dispersion of lignin in the PLA polymer matrix.</p>	<ul style="list-style-type: none"> <li>• Nonwoven industry</li> <li>• End-user with a biodegradable and functional textile material for specific applications</li> </ul>	Jan-Dec 2023		GAA	new
<b>TEXTILE RESOURCE MANAGEMENT R&amp;D PROGRAM</b>						
Life Cycle Analysis of Natural Textile Fibers for Green Technology Validation	<p>This project will identify and take into account the raw materials and fuels used as well as all the process involved in converting natural fiber into yarns.</p> <p>This study will only conduct a Cradle to Gate Life Cycle Analysis on PTRI developed cotton-blended fabrics that are ready for commercialization. This project will aid the institute to confidently promote sustainability, validate the claim of green technology and implement ecolabelling scheme associated with natural textile fibers.</p>	<ul style="list-style-type: none"> <li>• The data generated in this project will serve as a foundation for manufacturers, process engineers, natural dye processors, and even environmentalists who want to start a similar business with natural fiber materials.</li> </ul>	Jan-Dec 2023		GAA	new
<b>TEXTILE CONVERSION AND CREATIVE INDUSTRIES R&amp;D PROGRAM</b>						
Composite Textile-Reinforced Elastomeric and Rigid Polymer Materials for Footwear	<p>This project shall explore the use of natural fiber-based textile materials as reinforcements for elastomeric/rubber materials and rigid polymer-based composite materials: woven fabrics from natural textile fiber (NTF) yarns, NTF-based nonwoven fabrics, and composite textiles composed of woven and nonwoven joined together with an adhesive and calendaring process. In coordination with the footwear industry, these materials shall be developed into prototype products that are suitable for use of varied shoe and footwear parts.</p>	<ul style="list-style-type: none"> <li>• Composites producers</li> <li>• Natural fiber production innovation hubs</li> <li>• Academic institutions</li> <li>• Home furnishings sectors</li> </ul>	Jan-Dec 2023		GAA	new