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Seri Bio Crafts as a Diversification Strategy for Enhancing Income in Sericulture Farming Communities

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Seri Bio Crafts offer a new and eco-friendly way of looking at the sericulture industry, which is centered around raising silkworms to produce silk. This process not only yields silk fibers but also generates several by-products like pierced cocoons, pupal waste, reeling waste, mulberry twigs, and sericin-rich effluents. In the past, these materials were largely left unused. However, Seri Bio Crafts aim to repurpose these materials into sustainable, artistic, and commercially viable products.

In India, organizations such as the Central Silk Board and state-level sericulture departments have been encouraging diversification in silk-based businesses to support rural livelihoods and empower women. Seri Bio Crafts play a key role in this by promoting small-scale entrepreneurship, especially among self-help groups and rural artisans. These crafts include decorative items, eco-friendly jewellery, handmade paper, spun silk products, dolls, wall hangings, and biodegradable handicrafts—all made from sericulture waste. This approach helps reduce environmental impact while creating economic opportunities.The concept of Seri Bio Crafts aligns with the principles of sustainable development through strategies like waste-to-wealth, circular bioeconomy, and eco-conscious production.

By merging creativity with biological resources, it not only boosts the economic value of sericulture but also promotes environmental conservation and rural employment.Thus, Seri Bio Crafts serve as a promising addition to the sericulture industry, combining traditional silk production with innovative bio-based craftsmanship for sustainable growth.

Types of Seri Bio-Crafts

Bio-crafts involve using cocoons in various creative forms, such as:
Decorative items: Flowers, bouquets, vases, garlands, wall hangings, and dream catchers.
Accessories: Jewellery like necklaces, earrings, bangles, brooches, and hairpins.
Utility items: Purses, bags, table mats, and traditional festive items like torans.

Materials and Methods

The main raw material for making cocoon handicrafts comes from pierced or cut cocoons obtained from silkworm egg production centers. These are supplemented with rejected cocoons that are malformed, double, or contain dead pupae, which are used as a cost-effective alternative to improve resource efficiency and economic returns.

Auxiliary Materials

Cutting and shaping tools: Scissors, zig zag cutters, and blades for shaping cocoons and decorative paper.
Binding and structural supports: Cotton thread, jute thread, needles, fancy plastic or wire stems, and satin ribbons.
Decorative and adhesive materials: Fabric glue, gum, craft paper, glaze paper, velvet paper, adhesive tape, colour tape, beads, plastic ornaments, and staplers.

Colouring agents and tools: Chemical dyes, fabric paints, watercolours, sketch pens, and paintbrushes.
Other materials: Plastic bottles (as vase bases) and velvet sheets (for flat flower arrangements).

Tools and Their Applications

Scissors: For cutting paper and shaping cocoons.
Zig-zag cutter: For creating serrated edges in garlands or feather-like shapes.
Fancy plastic/wire stems: To create the stem structure of cocoon flowers.
Satin ribbon: For tying bouquets.
Velvet sheets: As a base for making flat flower arrangements.
Glue and gum: For attaching cocoon components while assembling.
Beads: To add an aesthetic touch to caps, garlands, and decorative pieces.
Stapler: For securing the edges of bouquets and greeting cards.
Plastic bottles: As the base for cocoon flower vases.
Jute thread: For making cocoon wall hangings.

Cocoon Dyeing Procedure

Dyeing cocoons before crafting is done to enhance their visual appeal.Natural dyes are preferred, but chemical dyes, commonly used in silk textile processing, are also used. Soft water is essential for uniform dyeing and minimizing dye usage.

Procedure

1. Boil soft water and mix 100 grams of dye powder with 100 milliliters of hot water.
2. Stir continuously to avoid clumping and filter the solution.
3.Add the filtered dye to the hot water bath and stir until the color is evenly distributed.
4. Place clean, deflossed, and rejected cocoons into the dye bath, which is kept at 50 °C to prevent sericin degradation and deformation.
5. Stir continuously until the cocoons absorb the dye evenly.
6. Remove the dyed cocoons and dry them in a single layer in the shade to prevent fading. Store them in a clean, dry place until they are used for creating handicrafts

The Process of Making Bio-Crafts

1.**Selection:** Collect pierced or defective cocoons after the moth has emerged.
2.**Cleaning & Dyeing:** Clean cocoons to remove debris and dye them in different colors to match the design.
3.**Crafting:** Cut and shape the cocoons into petals or other forms using scissors and attach them using glue or stitching.
4.**Assembling:** Combine different elements to make finished products like flowers, which can be displayed in vases or on hangers

Benefits and Significance

The main benefit of Seri Bio Crafts is the reduction in environmental impact associated with synthetic materials.
Biodegradability: Unlike synthetic polymers or plastic-based crafts, silk fibroin and sericin (the natural glue in silk) are biodegradable and do not leave microplastics.
Zero-Waste Potential: Traditional silk production focuses only on the long fiber. Seri Bio Crafts make use of waste materials like broken cocoons, pupae, and sericin from degumming to create new products.
Hypoallergenic Products: Crafts like jewelry or tools that come into contact with skin are naturally resistant to dust mites and mold.
Durability: Crafts made from compressed silk waste or silk-reinforced bio-composites are highly resilient.
Value Addition: By converting “waste cocoons” into crafts or bio-composites, farmers can boost their income by 20–30%.

Empowerment: Sericulture is often a small-scale industry. Developing a bio-craft sector enables local artisans, especially women, to gain new skills in product design and bio-processing.

Preservation of Heritage: It modernizes traditional techniques, ensuring that the cultural significance of sericulture remains relevant for a generation that values eco-friendly and ethical products.




Conclusion

Seri Bio Crafts represent an innovative and sustainable approach within the sericulture sector by incorporating biological resources, eco-friendly processing, and the development of high-value products. By using silkworm by-products like pierced cocoons, pupal waste, sericin, and reeling residues, Seri Bio Crafts help minimize waste and support a circular economy.

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