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Green Gold: Water Hyacinth as a Gateway To Agri-preneurship in Assam

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INTRODUCTION

Water Hyacinth, scientifically known as *Eichhornia crassipes*, is a perennial aquatic plant originally native to the Amazon basin in South America. Renowned for its large, vibrant purple flowers, it was initially introduced to India as a gift from the British towards the end of the 18th century. Lady Hastings, captivated by its beauty, brought the plant to India, where it has since proliferated across numerous water bodies.

Despite its aesthetic appeal, Water Hyacinth has earned a notorious global reputation as one of the most invasive aquatic weeds. Referred to as the "German weed" in Bangladesh, the "Florida Devil" in South Africa, the "Terror of Bengal" in India, and the "Japanese Trouble" in Sri Lanka, this plant exhibits rapid growth, capable of doubling its population in just two weeks. However, its unchecked expansion poses significant environmental and economic challenges.

Water Hyacinth forms dense mats of biomass on water surfaces, obstructing sunlight and depleting oxygen levels below the water's surface. This disruption causes imbalances in aquatic ecosystems, adversely affecting native vegetation and reducing fish populations, thereby impacting the livelihoods of fishermen. It significantly amplifies water loss through evaporation, surpassing areas without the plant by 2.5 to 3 times. Its aggressive growth outcompetes other aquatic plants, disrupting natural ecosystems and diminishing biodiversity. Additionally, it acts as a breeding ground for mosquitoes and other parasites, posing health risks to nearby communities Moreover, the plant's proliferation leads to the destruction of natural wetlands, exacerbates flooding by blocking rivers and canals, and poses a severe threat in flooded rice fields, where it significantly reduces crop yields.

Figure 1: Pond infiltrated by Water hyacinth (Source: https://news.cgtn.com/)

Figure 2: Blooming season of Water hyacinth (Source: https://news.cgtn.com/)

Transformation of water hyacinth into useful products

In response to the crisis, Indian artisans swiftly adapted, turning adversity into opportunity through water hyacinth craft. Assam, known for its abundant water bodies, emerged as a hub for this craft. Artisans skilfully transform water hyacinth stems into a diverse array of handmade products including shoulder bags, sling bags, baskets, mats, and home decor items.It boasts an astonishing yield of over 200 tons of dry matter per hectare annually under typical conditions, with potential yields reaching up to 657 tons per hectare in heavily sewage-laden waters (asrlms.assam.gov.in). In Assam, this aquatic plant proliferates widely across various water bodies, ranging from large lakes to small village ponds, where it was historically regarded as a nuisance or waste material. Initiatives aim to transform this environmental issue into opportunities for economic and ecological benefits through innovative applications such as crafting, biogas production, and organic fertilizer development.

Objective of the project

ASRLM (Assam State Rural Livelihood Mission), a government initiative in Assam, focuses on fostering sustainable livelihoods in rural areas. The mission empowers women through Self Help Groups (SHGs) by enhancing their skills, facilitating access to credit, and providing market support. All goods produced by these SHGs are marketed under the brand 'ASOMI'. The name ASOMI symbolizes unity (*Atmo*), companionship (*Sohayok*), women's empowerment (*Mahila Gootor*), and identity (*Porichoy*), reflecting the essence of Assamese culture.The ASOMI product line showcases a diverse array of handloom and handicraft items crafted across 20 craft clusters in Assam. The artisans' creativity knows no bounds, offering a wide range of products that can be tailored to meet specific needs

The initiative aims to promote water hyacinth craftsmanship as a sustainable source of income in rural areas, particularly empowering women beneficiaries economically. The project specifically targets six blocks across six districts in Assam, namely:

SL. No	**Name of the District**	**Name of the Block**	**No of SHG members to be covered (Approx)**
1.	Kokrajhar	Kokrajhar	850 SHG members
2.	Darrang	Pub Mangaldai	
3.	Nagaon	Dolongghat	
4.	Dhemaji	Dhemaji	
5.	Majuli	Majuli	
6.	Tinsukia	Guijan	

(Source: asrlms.assam.gov.in)

Capacity building

Tailored technical training and capacity-building programs have been developed to enhance the skills and productivity of artisans engaged in water hyacinth crafts, addressing their specific needs and requirements.

Sl. No	Type of Training	No of Artisans to be covered
1.	Skill Development Programme at village level	600
2.	Advanced Training at NEDFi R&D Centre, Khetri	60
3.	Product Specific Reorientation Programme at village level	150

(Source: asrlms.assam.gov.in)

The process begins with harvesting water hyacinth, followed by thorough cleaning to remove mud and debris, separating leaves and stems, and drying and treating the material. Finally, artisans weave the processed stems into various products, showcasing their creativity and resourcefulness.

The process of transforming water hyacinth into useful products involves the following steps:

1. **Harvesting:** Water hyacinth is gathered from lakes, rivers, or ponds where it thrives abundantly. Harvesting follows sustainable practices to preserve the ecosystem, ensuring mature plants suitable for crafting are selected.
2. **Cleaning and Drying:** Harvested water hyacinth undergo thorough cleaning to remove dirt and debris, preparing it for processing. After cleaning, the material is sun-dried for approximately two weeks to eliminate moisture, making it ideal for weaving.
3. **Splitting and Stripping:** Once dried, skilled artisans carefully split the water hyacinth stems into thin strips using knives or machines. These strips are further divided into finer strands to prepare them for weaving, ensuring uniformity and quality.
4. **Dyeing (optional):** Depending on the desired colour scheme, the strands may be dyed using natural or synthetic dyes. This step is elective and depends on the product's design requirements or preference for natural hues.
5. **Weaving:** Artisans employ traditional weaving techniques to interlace the dyed or natural strands, crafting patterns specific to products such as handbags, carpets, or purses. Precision is crucial to maintain structural integrity and aesthetic appeal.
6. **Finishing**: Post-weaving, products undergo final touches to enhance appearance and durability. This includes trimming excess strands, adding handles or straps, and applying protective coatings to improve resilience against wear and tear.

7. **Quality Control:** Finished items undergo rigorous quality checks to ensure they meet craftsmanship, durability, and aesthetic standards. Any imperfections are addressed during this stage to uphold product excellence.
8. **Packaging and Distribution:** Products are meticulously packaged to safeguard them during transit and distribution. Environmentally-friendly packaging materials are chosen to minimize environmental impact. Finished goods are then distributed through diverse channels like online platforms, local markets, and specialty stores.
9. **Artisanal Skill and Knowledge Transfer:** The crafting process relies on skilled artisans who inherit and refine their expertise across generations. This ensures the preservation of traditional knowledge in working with water hyacinth, maintaining the authenticity and quality of products.
10. **Environmental and Economic Impact:** Utilizing water hyacinth for crafting not only provides livelihoods for local communities but also aids in managing this invasive plant. By recycling a natural resource, the craft supports sustainable practices, mitigating environmental challenges associated with unchecked growth. This comprehensive process highlights how water hyacinth, through skilled craftsmanship, can be transformed into valuable and sustainable products, benefiting both artisans and the environment.

ACHIEVEMENTS OF THE PROJECT

ASRLM launched this initiative to provide additional income for SHG members through part-time engagement. Recognizing the importance of proper training, ASRLM partnered with NEDFi, a leading agency in water hyacinth craft in the North-Eastern Region, to provide technical support. Tailored technical training and capacity-building programs were designed to enhance the skills and productivity of artisans in Assam, including skill development at the village level, advanced training at NEDFi's R&D Centre, and product-specific re-orientation programs. ASRLM established six Common Facility Centres (CFCs) across six clusters, equipped with necessary resources for sustainable operation. Production commenced in February 2018 in phases, generating a total income of Rs. 64,51,824/- by March 2020, averaging Rs. 9000/- per member. These CFCs are registered and operate within government procurement norms, with six products listed on the Government e-Marketplace (GEM) portal. SHG members participated in national fairs, including the 'India Garment Fair & India Home Furnishing Fair' in Osaka, Japan, garnering international recognition. The project fulfilled a significant bulk order for "Yoga Mats" on International Yoga Day 2019, delivering within 20 days. The project's success, aptly named **"Weed to Wealth"** by the livelihood team, has expanded to include more SHG members in its second phase, reflecting its impactful growth and economic empowerment.

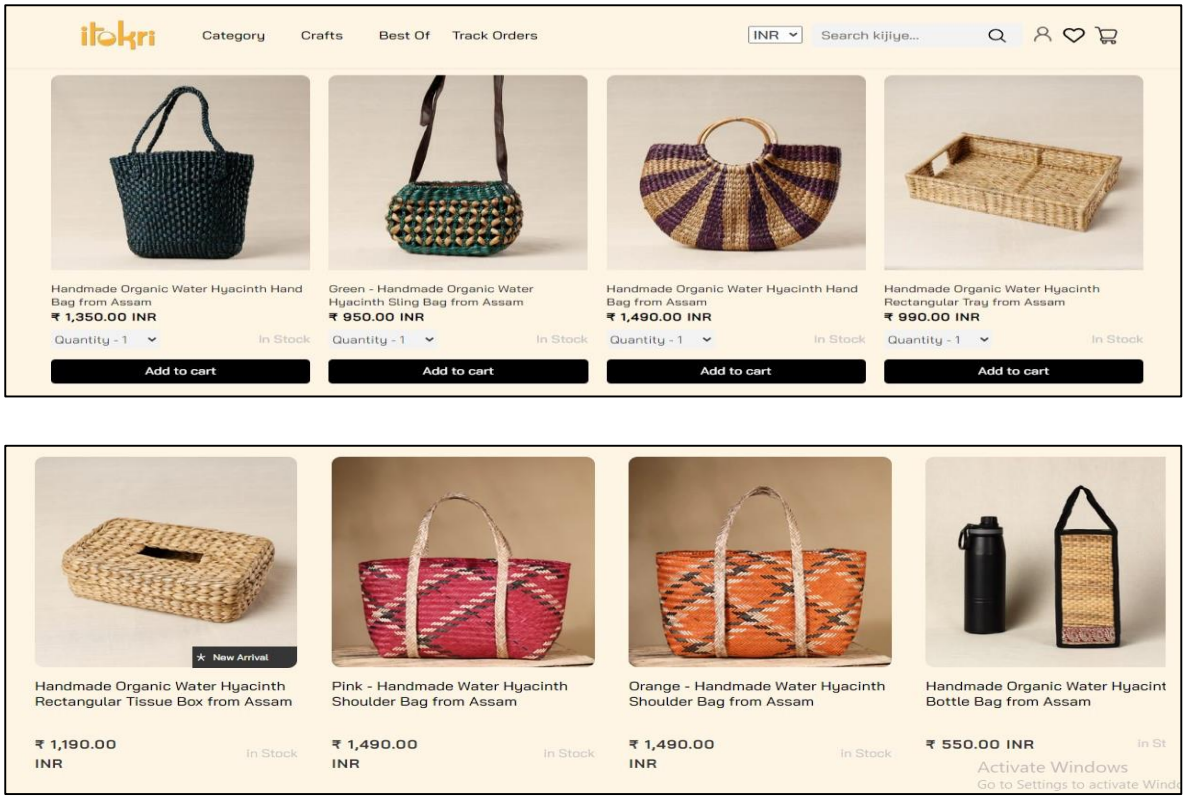

Figure 3: Products such as hand bags, purse, water bottle cases prepared from water hyacinth (Source: tokri.com**)**

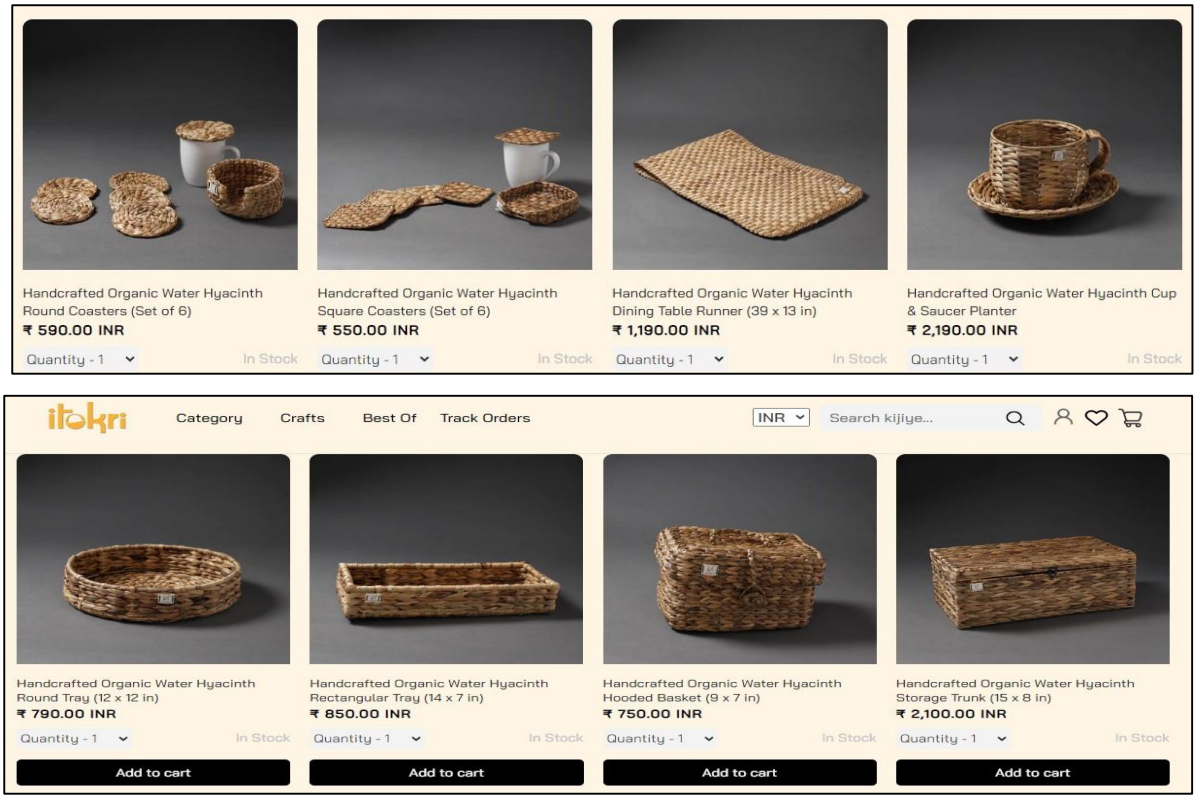

Figure 4: Products such as cup covers, baskets, trays, mats prepared from water hyacinth (Source: tokri.com**)**

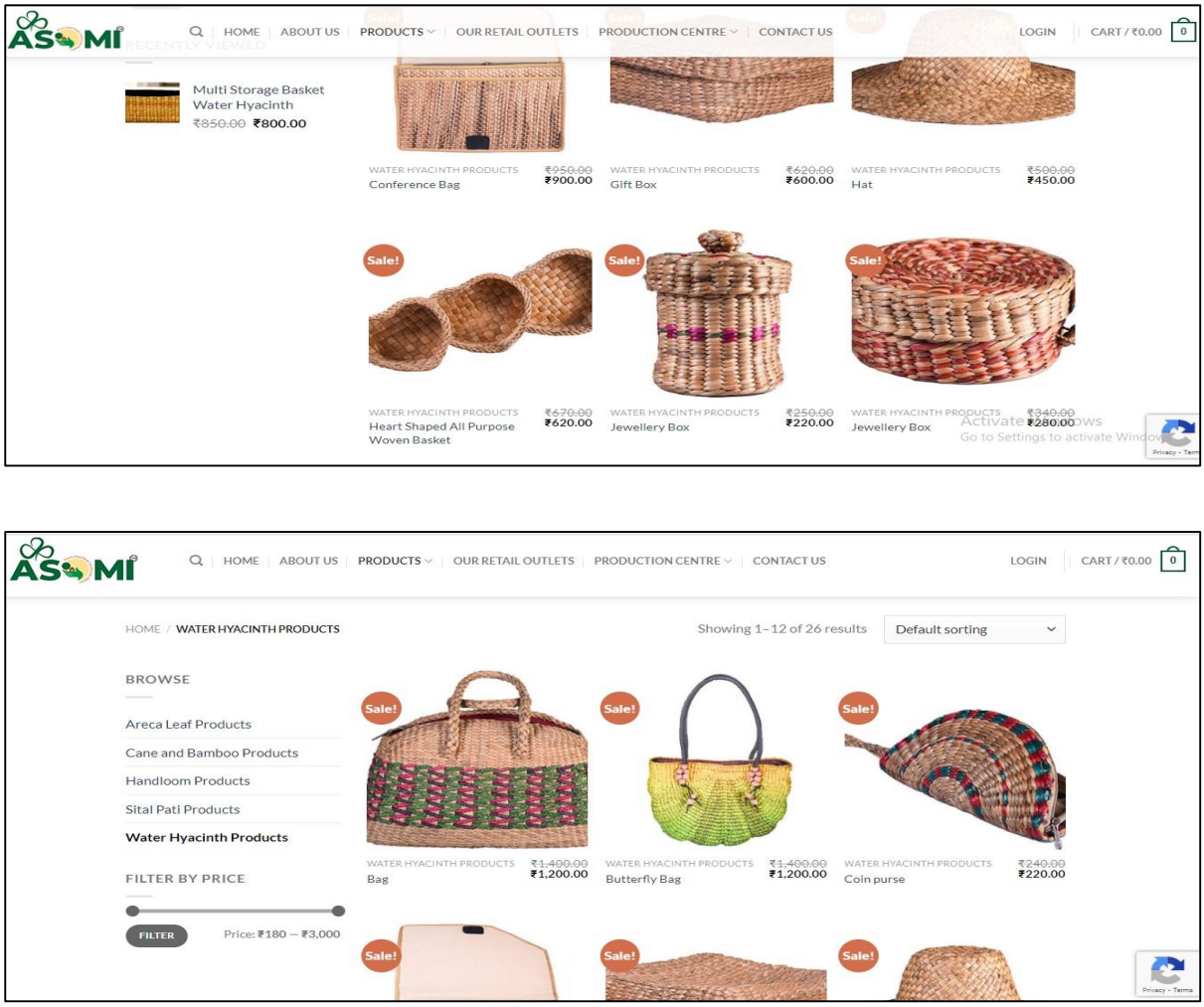

Figure 5. Additional products (Source: www.asomi.biz**)**

Other achievements on this field

Six young girls from the fishing community in Assam, residing near the Deepor Beel lake—a Ramsar Site and bird sanctuary—have developed a biodegradable and compostable yoga mat using water hyacinth, transforming this aquatic nuisance into a valuable resource. Named the '***Moorhen Yoga Mat'***, this innovative product is set to be launched globally, marking a significant achievement for the community and their initiative, led by a collective called '***Simang***', meaning dream. Supported by the North East Centre for Technology Application and Reach (NECTAR), under the Department of Science & Technology, Government of India, the project aims to empower women and enhance the ecological health of the wetland by utilizing water hyacinth sustainably. The mat, hand-woven using traditional Assamese loom techniques, involves the engagement of 38 women from three villages. It is not only biodegradable and compostable but also features natural dyeing with materials sourced locally from the Loharghat Forest Range. The initiative, spearheaded by the '7WEAVES' team, focuses on creating sustainable livelihoods and promoting self-reliance ('Atmanirbhar') among indigenous communities. The Moorhen Yoga Mat is packaged in a cotton canvas bag designed for

biodegradability, showcasing a thoughtful approach to environmental sustainability in every aspect of its production and use (Source: pib.gov.in)

CONCLUSION

Products made from water hyacinth represent a multifaceted solution that brings economic benefits, environmental sustainability, and entrepreneurial opportunities to communities. Economically, these products provide additional income streams for women in SHGs, supported by initiatives like ASRLM, while also addressing the environmental challenge posed by this invasive plant. By converting water hyacinth into useful items such as purses, mats, and bags, artisans not only generate income but also contribute to ecological balance by controlling its growth in water bodies. This dual impact not only supports farmers indirectly by managing water levels and preserving biodiversity but also serves as a springboard for entrepreneurial ventures. Through innovation and creativity in product development, water hyacinth crafts enable individuals to establish and expand businesses, fostering local entrepreneurship and economic self-reliance in rural areas.

Future prospects

Water hyacinth products show promising prospects as agripreneurship ventures. Future advancements in research, innovation, and external funding can expand product diversity, improve quality, and scale production. Strategic partnerships will be crucial for accessing new markets and enhancing socio-economic impacts in rural communities.

REFERENCES

1. https://www.asomi.biz/product-category/water_hyacinth/page/2/
2. https://pib.gov.in/PressReleasePage.aspx?PRID=1715872
3. https://itokri.com/collections/assam-water-hyacinth-craft?page=4