

## **Plant Leather Alternatives from Agri-Biomass**

There is a huge environmental hazard associated with leather products and synthetic leather. Synthetic leather market was valued at over 30\$ billion at 2020 and by next six years, it is expected to become 40\$ billion. Also, production of leather involves lots of hazardous chemicals and the processing of leather is also highly energy consuming, water consuming, and involves use of toxic chemicals. Hence, people are looking for alternatives to leather using green routes and green solvents. Hence, there is a need to find alternative materials to synthetic leather with less environmental hazards and smaller carbon foot print.

On the other hand, due to changing lifestyles and the increasing global population, a large number of large scale activities are being carried out in the food processing sectors in the area of value addition and post-harvest technologies. India being an agricultural country with about 60% of people engaged in agriculture and related activities, huge volume of agro-waste/by-products are available. This, in turn, releases huge amounts of agricultural residues/by-products into the environment. Utilization of these wastes as an alternative to single-use plastics provides immense opportunities.

In this regard, CSIR NIIST has taken up the task of developing vegan leather from various agricultural residues and by-products. This developed technology would effectively replace around 30-50 % of synthetic chemicals from the existing leather available in the market. Different protocols and different process parameters are optimized based on the type of agro-waste.

The final product produced shows good tensile strength, perfect finish, good water retention properties, temperature resistance, and stability compared to other existing synthetic and animal leather.

This developed process will find a good place in the market owing to people's and the government's urge to find alternatives to plastics.

Raw materials like Mango peels, banana stem and pineapple wastes, Cactus, water hyacinth, corn husk, rice related wastes and other relevant agro residues and by-products can be effectively used to make vegan leather.





