

### **Biodegradable cutlery from Agri biomass alternative to single use plastics**

As we know, India is an agrarian country with almost 60 % of the population depends either directly or indirectly on agriculture works, which in turn leads to lot of waste generation. Utilization of various the agro residues (say, rice bran, rice husk, rice straw and wheat wastes, fruit peels etc.,) for production of biodegradable products will help in increasing the income of farmers through value addition. This initiative is in line with our honourable PM's mission of "doubling the farmer's income by 2022".

In this regard, CSIR-NIIST has developed several biodegradable products from various agricultural residues and by-products for replacing single-use plastics. The developed product is shelf stable up to the period of 10 to 12 months and heat resistant up to 100 C with production cost varies between 1-2 INR for plates of size 5-15 inch diameter.

So far, the technology is transferred to 17 industries, 3 industries have started commercial production and 1 industry sponsored project from ITC and 3 govt sponsored projects are going on in this area with a total financial outlay of INR 400 Lakhs total.

### **Developed products**





**TECHNOLOGY PARTNER  
COUNCIL OF SCIENTIFIC AND INDUSTRIAL  
RESEARCH ,GOVT OF INDIA**

**INCUBATION AT IIT-KANPUR, KERALA AGRICULTURAL  
UNIVERSITY & INDIGRAM LAB FOUNDATION**

## ABOUT

Thooshan came into existence with a goal to provide a replacement for the current disposable plastic utensils on the market. Our mission is to start a

Thooshan's dishware has a longer shelf life and is fungus and bacteria resistant. Dishware from Thooshan is completely biodegradable and partially edible.



UNDER TECHNOLOGY TRANSFER FROM CSIR-NIIST  
COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH  
NATIONAL INSTITUTE FOR INTER-DISCIPLINARY  
SCIENCE & TECHNOLOGY  
MINISTRY OF SCIENCE AND TECHNOLOGY, GOVERNMENT OF INDIA  
Manufactured by  
Aura Exim, Co. Tower 2, INKL Business Park,  
Angamaly, kerala-683573, Kerala, India  
Marketed and Distributed by VRI Naturals Pvt Ltd,  
Kochi-682020 Kerala, India

CSIR-NIIST



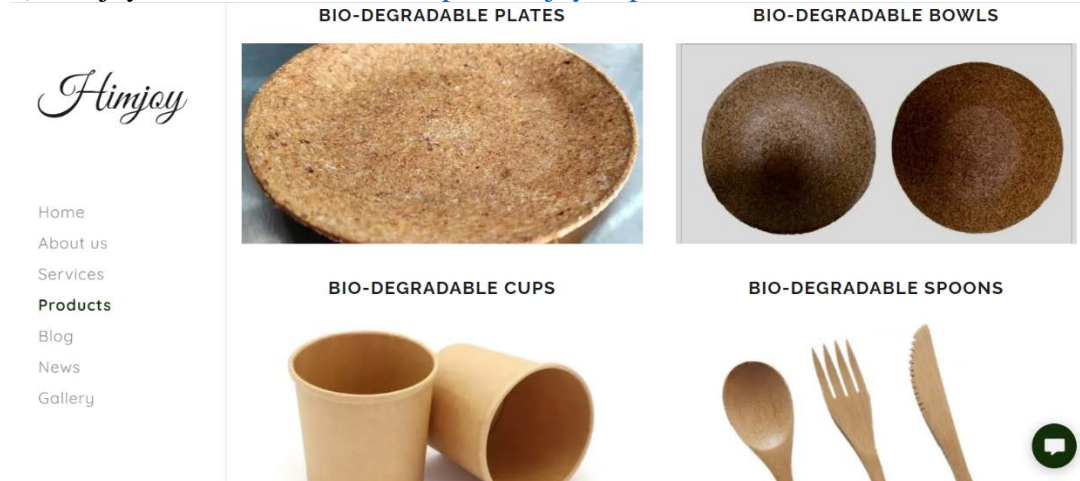



Biodegradable cutlery made from edible wheat bran.



Aura Exim commercialized plant (Thooshan brand)

2) Himjoy, Himachal Pradesh, <https://himjoy.in/products>



3) Vazhakulam Agro and Fruit Processing Company Ltd, Kerala, <http://www.jivekerala.com>



4) Maraiakar Green Earth Private Limited, Trivandrum Kerala.  
<https://www.zaubacorp.com/company/MARIKAR-GREEN-EARTH-PRIVATE-LIMITED/U36999KL2020PTC065974>



5) Unigreen & Barnett Polypet Private Limited, Ahmedabad, Gujarat

<https://unigreen.in/contact.php>

6) Bio based resins for paper coating applications and biodegradable cutlery technology  
VARSYA



**M/S ITC Ltd., Bangalore for plant fibers based biodegradable packaging containers**