

Nanotechnology based Solar Dryer and Electric Smoker developed by AdtU & NERAMAC



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Two innovative food processors namely a ‘Solar Drier’ and an ‘Electrical Smoker’ developed jointly by Assam down town University (AdtU) and North Eastern Regional Agricultural Marketing Corporation Limited (NERAMAC) were inaugurated at National Agri Horticultural Show 2021 on 21 January being held at Bokakhat, in Golaghat district of Assam by Atul Bora, Minister of Agriculture, Horticulture & Food Processing, Animal Husbandry & Veterinary, Govt of Assam.

The processors were developed under an MoU signed between these two leading organisations.

Talking to Assam Times, Dr Sunandan Baruah, Dean of Engineering & Technology and head of the innovation team of AdtU said, "The Nanotechnology based Solar Dryer uses an indirect heating technique to collect solar phonons and heat up a closed chamber which can be used for drying fruits, vegetables, fish, meat, etc. The prototype is equipped with 3 heating trays of dimension 2 feet by 2 feet. A typical outside temperature of 28oC can generate a chamber temperature of about 75 oC. The chamber temperature can be controlled using an electronic controlling system to maintain the taste and aroma. The drying trays are given an antifungal/antimicrobial nanocoating to ensure that the products that are dried are free from bacteria and fungi. The design can be scaled up/down to customize to user needs."

"On the other hand, the Electric Smoker is designed to smoke agricultural/horticultural/Meat/Fish produce to add flavour and ensure long shelf life. The traditional way of smoking creates carcinogenic compounds which can lead to health issues when consumed. The smoker designed at AdtU minimize the production of carcinogenic aromatic compounds and ensure safety of consumption of the smoked products. The smoker can also be used as a electric grill. The trays are coated with bio safe nanomaterials to ensure that fungal and microbial growth does not take place and the products have enhanced shelf life. The smoking can be carried out using wood dust from different plants, especially hard wood of fruit trees", Dr Baruah added.

The machines were also demonstrated before Rajesh Prasad, IAS, Principal Secretary to the Govt. of Assam; Akashdeep, IAS, Commissioner & Director, Agriculture, Assam. Few Ambassadors of African Nations also admired the prototypes and evinced interest in taking the technologies to Ghana. NERAMAC Managing Director Manoj Kumar Das and Dr Sunandan Baruah, Dean of Engineering & Technology, AdtU were present with their respective teams.

It may be mentioned that NERAMAC, which is the only PSU to have 13 GI registrations in the world, which is for farmers' benefit. NERAMAC participated in National Agri Horticulture Show 2021 with seven entrepreneurs from North East India.

NER is a Bio Diversity Hot Spot of the World and due to its exotic eco system has evolved rich flora and fauna. It is rich in fruits and vegetables like Banana, Jackfruit, Areca-nut, Cashew-nut, Litchi, Orange, Star Fruit, Cauliflower, Cabbage, Sweet Potato, Tapioca, Tomato, Brinjal, Pumpkin, Wood Apple, Bitter Gourd, in large quantities and exotic fruits and vegetables like Elephant Apple, Tamarind, Plum, Olive, Assam Lemon, Ash Guard, Passion fruit, Drumstick, Hibiscus etc. and spices like Large Cardamom, Ginger, Turmeric, Chillies, Black Pepper, Star Anish, Jabrang, Alpena Galenga, Bay leaves, Long Pepper, Pipli, Cinnamon etc. It is also very rich in Medicinal & Aromatic Plants like Amla, Ashwagandha, Curry Leaves, Sugandh Mantri, Harad, Bhumura etc. It also of late started adopting high value exotic fruits like Dragon Fruit, Strawberry, Cocoa, Apple Plum etc. which is giving additional income to the farmers. NERAMAC has been procuring, processing and marketing these products through out the country through its marketing network.

Much of these above produces are wasted or are sold at throw away prices due to lack of primary processing, storage, conversion to products etc. These innovative processors are desired to be placed at household level to imbibe a culture of value addition at farm gate. This will help aggregation and marketing at scaled up level. Speaking on the occasion, Hon'ble Minister suggested development of a drier for reducing moisture in Assam Rice.



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