

## 'SEED' SOLAR CABINET DRYERS ENTERED IN NORTH-EASTERN STATES FOR PROCESSING OF FRUITS & VEGETABLES FOR VALUE ADDITION & INCOME GENERATION TO SHGs UNDER LIVELIHOOD PROJECT

Solar Energy Dryers are entered in North Eastern States of South Sikkim & West Sikkim for livelihood project for the first time. Under this project, two 'SEED' Solar Cabinet Dryers – SDM-50 model are installed in South Sikkim and West Sikkim respectively for processing of fruits, vegetables and other food items for value addition and preserving for long shelf life with zero energy cost & zero carbon emission. The two organizations are Sadam Rabitar SHG Federation, Sumbuk South Sikkim and Yangten SHG Federation of Upper Bhaluthang Village, Yangten GPU, Gyalshing Block, West Sikkim. The beneficiaries are Self Help Group members of two organizations.

'SEED' supplied and installed two 'SEED' solar cabinet dryers – SDM-50 model at their respective places and demonstrated the working operations of solar cabinet dryers at their locations effectively. During demo the temperatures recorded are 19.7° C ambient and cabinet temperature 52° C at 12.30 p.m. at South Sikkim on 5th March 2019 and 13.4° C ambient and cabinet temperature 27° C at West Sikkim on 8th March 2019 that too under unfavorably weather conditions. They felt highly satisfied with the working of solar cabinet dryers in North Eastern States.

'SEED' promotes innovative solar cabinet dryer and solar food processing technologies in North Eastern States as well as other States in India and this triggered more activities by procuring 'SEED' solar cabinet dryers by other agencies of NERLP, Tripura and other organizations as well.

'SEED' is a Technology partner in promoting these innovative technologies in India with larger interests of achieving one of the sustainable development goals like mitigating climate change with green energy applications.

By G. Harikrishna

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## AMAZING FOOD: FRUITS

Fruits, fresh or dried have been natural staple diet of human being since ancient times. They are good source of vitamins and minerals and fiber. A fruit will boost one's energy instantly. It is something which can quench thirst and satisfy hunger at the same time. Fruits are great for people who are very busy and sometimes miss a meal and need to eat something on the go. Since its handy it can be eaten even on the move. Fruits are an essential part of a healthy diet.

These are full of antioxidants and low in calories and fat content. Fruits, nuts, and vegetables play a significant role in human nutrition, especially as sources of vitamins [C (ascorbic acid), A, thiamine (B1), niacin (B3), pyridoxine (B6), folacin (also known as folic acid or folate) (B9), E], minerals, and dietary fiber.

When it comes to our children, they seem to be more interested in eating a pastry or cookies or some other calorie dense food as a snack rather than a fruit. If fruit is given in the form of a smoothie or milk shake or as part of a dessert, then they do not complain but ask them to eat it just like that then see the fuss they make.

And if at all they eat a fruit they want fruits like apples, mangoes, kiwis, grapes or strawberries! What happened to good old guavas, Indian plums, jack fruit, pomegranate etc! They do not seem to be interested in these fruits at all and mothers have a tough time to get one fruit in. It is almost like they are lazy to bite and eat a whole fruit and they would rather get it in the form of a sweet calorie laden milk shake. And mothers have no choice but to make milk shakes or smoothies to get some fruit into their children.

News reports in Times of India and Telegraph on 12 October 2011 say that the humble guava is the healthiest fruit for the human body, while the pineapple is at the bottom of this index. The first-of-its-kind

research to evaluate the amount of natural antioxidant levels of 14 fresh fruits commonly consumed in India has come up with surprising revelations. Guava came in at the top, followed by the Indian plum. Mango, pomegranate, custard apple and apple are among the other fruits that offer the highest amounts of antioxidants. The study - conducted by Hyderabad's National Institute of Nutrition - found that pineapple, banana, papaya, watermelon and grapes had lower amounts of antioxidants compared to the fruits mentioned before.

Antioxidants play a crucial role in preventing cellular damage - the common reason for aging, cancer and several degenerative diseases. The scientists from India's National Institute in Hyderabad found antioxidant concentrations of just under 500 milligrams per 100 grams in guavas, 330mg in plums and 135mg in pomegranates. Apples have a quarter of the antioxidants in guavas, while bananas the fruit of athletes have just a tiny fraction with 30 mg per 100 grams.

These fruits, for example guavas and Indian plums are not only rich in antioxidants but are less expensive than other fruits. We need to tell our children about the goodness of these fruits so that they make a habit of eating them. Different coloured fruits contain different minerals, nutrients and antioxidants and therefore it is recommended that we consume a wide variety of fruits in order to receive the benefits from the various types.

SEED solar dryer is an innovative equipment, which can dehydrate the fruits to produce value added products such as fruit bars, fruit powders, dehydrated fruit pieces as snacks and chocolate enrobed fruits as candies etc. solar processed product not only improve the shelf life of fruits but also concentrate the nutrients.

Dr. Kavitha Reddy

**71<sup>ST</sup> TECHNOLOGY TRANSFER PROGRAMME ON  
“SOLAR FOOD PROCESSING FOR VALUE ADDITION TO FRUITS & VEGETABLES”  
28 – 31<sup>ST</sup> MAY 2019 AT SEED**

The Technology Transfer of Solar Food Processing for Value Addition to Fruits & Vegetables” was conducted for 4 days from 28–31st May 2019 at ‘SEED’ Headquarters, Hyderabad.

18 were participants were participated in this technology transfer programme. They are from 5 tribal women group (self help group), sponsored by M/s. Centre for Research & Development (CDR), Rampachodavaram, Andhra Pradesh, 2 from Ms. Kataria Food Innovators, Udaypur, Rajasthan, 3 entrepreneurs/individuals, Kakinada in A.P. 8 internship students of Food, Science & Technology, S.V. University, Tirupathi and Osmania University. 5 tribal participants are meant for starting micro enterprises at two locations nearby Rampachodavaram, sponsored by CDR.

Hands on experience was taught in processing of Mango fruit, vegetables like Tomato, Carrot, Spinach and Millets in ‘SEED’

solar cabinet dryers, especially in solar dehydration and osmo-solar dehydration processes.

The programme contains a product identification, pre-treatment like blanching, mixing and blending of the ingredients and for drying in solar cabinet dryers. Tests like pH, Brix, Acidity and packing techniques were also taught during the programme for the benefit of the participants.

The Faculty for this training programme are from ‘SEED’ expertise team, CFTRI, NIN, and other food Consultants. Hands on experience in solar dehydration processing of Mango, Carrot, Tomato, Finger millets, Leafy vegetables was conducted by

Dr. Y. Sreenivasulu & Ms. Swetha.



**GITAM UNIVERSITY  
INSTALLED THE LARGEST  
‘SEED’ SOLAR CABINET DRYER –SDM-200 MODEL**

GITAM University has started the appreciation of the New & Innovative solar cabinet dryer & solar food processing technologies, developed by ‘SEED’.

Appreciating the great potential of solar food processing technology, ‘SEED’ entered into an MOU with GITAM University in 2011 to popularize the Solar Energy Applications for

- i. Collaborative Research in the areas of Renewable Energy Applications, especially solar food processing technology.
- ii. Conducting internship programmes at ‘SEED’ R & D Centre in solar food processing technology for M.Sc., Food, Science & Technology students of GITAM University.
- iii. Promote & popularize New & Innovative technologies of Solar Cabinet Dryer & Solar Food Processing Technologies.

More than 50 students of M.Sc. Food, Science & Technology have been trained at ‘SEED’ R & D Centre for the last 5 years in solar food processing technology for partial fulfilment of their degrees.

‘SEED’ installed the largest ‘SEED’ Solar Cabinet Dryer – SDM-200 model at GITAM University, Department of Science & Technology for Development & Extension of Technologies to improve livelihood of small farm holders at Alamanda, North Coastal of Andhra Pradesh. This centre was inaugurated on 30th June 2019 at the University Campus. 50 small farmers were trained in scientific processing of mango jelly, tomato, carrot slices etc., using solar cabinet dryers. The farmer entrepreneurs were also sensitized on hygiene and sanitation requirements and for maintaining optimum quality parameters for the products.

