



SEED COMMUNICATIONS

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Society For Energy, Environment & Development

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FROM THE DESK OF EDITOR

October-December 2015

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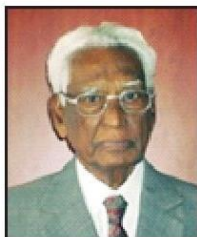
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A.P. Government Initiative in Skill Development in Solar Food Processing Technology

Prof. M. Ramakrishna Rao, Director (R&D), SEED



Society for Energy, Environment & Development (SEED), Hyderabad has entered into a Memorandum of Understanding (MOU) with A.P. Government's Society for Elimination of Rural Poverty (SERP) for conducting trainers training programmes in SEED solar cabinet dryers for the identified products, their officers and rural level entrepreneurs at SEED Laboratory in two

batches and establishment of 3 production-cum-training centres at Visakhapatnam, Vijayawada & Tirupati.

Firstly, the training programmes would be conducted for trainers in two batches at SEED Laboratory. Each batch consists of 10 members. The identified products for this programme are Amla Supari, Curry leaves, Mango bars, and Ragi Malt. The trained trainers will in turn train more persons at their local area at their production-cum-training centres. SEED will assist in technology transfer to the entrepreneurs.

Secondly, SEED would establish for SERP, 3 Production-cum-Training Centres (PTC) at Visakhapatnam, Vijayawada and Tirupati. At each centre 5 nos. of solar cabinet dryers are supplied with the necessary processing equipment for effective production of products. Each centre installed production capacity is 5 tonnes per annum of finished products approximately.

Thirdly, marketing of the products will be assisted by SEED initially for a period of one year. During this period, the entrepreneurs should learn all the stages of marketing for self sustainable income. Marketing of these quality products has been successful in urban areas. Now, SEED would be assisting SERP sponsored entrepreneurs in establishing the market in semi-urban markets.

The important feature of food processing in 'SEED' innovative solar cabinet dryers is more retention of nutrients values, texture, flavour and taste and processing is done in controlled and optimum required temperature. This innovative solar food processing technology is recognized by Department of Science & Technology, Ministry of Food Processing Industries, NABARD, APEDA and now SERP, Govt. of AP.

SEED is planning to start the project with two trainers training programmes during October / November, 2015. In this programme, with support from SERP, SEED will identify at least 10 participants and carry out six-day training program each on various aspects of solar food processing. These participants will be selected from the three proposed centers. These training programs will be focused on

empowering the participants with processing of agricultural and horticultural produce, basics of hygiene, sanitation, food safety, nutrition, production and marketing. Participants will be equipped to process agricultural and horticultural produce grown in their local areas and process at PTC facilities and distribute in the commercial market as livelihood solution. At the end of the program, the participants will be capable of not only managing the PTC but also will be able to train potential entrepreneurs and/or SHGs on solar food processing.



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Progress Report of HESCO on Solar Drying in Himalayan Region

Dr. Kiran (Rawat) Negi

Himalayan Environment Studies and Conservation Organization, Dehradun (HESCO)

Mountains are rich in diversity. Varieties of fruits are available in the region. The technique of fruit bar preparation is beneficial to farmers as farmers are not getting good price because of lack of transportation as well as local processing facilities. The processing of fruits could help them to get the good price of their produce. It is one of the important activity for mountain area.

Fruit bars have good market opportunity in this region. The product has the good shelf life and women are making it easily. The fruit like wild apricot & plum which has not good market value is being used for fruit bar preparation and better return can be ensured. The products are innovative and catch consumer attention too. The taste of the products is also different and isolates it from other processed fruits.

Women groups were trained on fruit bar preparation. Now this technique will be transferred to the other districts of mountain by these groups. This is the new product and other processing centers in the region will be involved in the production of the fruit bars.

The training centre developed will provide training to other groups.

The Special Features Are:

- ✧ It is local resource based enterprise.
- ✧ Under use resource is utilized.
- ✧ The drier is also solar based with zero energy cost
- ✧ The products are nutritionally rich and has a good shelf life
- ✧ Promote more area under fruits.



Following are the details for the location where dryers were placed :

Place	District	Use
Medanpur	Rudrapur	Seed drying
Pahi	Uttarakashi	Fruit bar, fruit drying
Govindghat	Chamoli	Fruit bar, fruit drying
Shuklapur	Dehradun	Fruit bar, fruit drying

FUTURE PROGRAMME

- ✧ Distribution of "SEED" Nutritive Drink to Peddapalli / Yendapalli school, sponsored by M/s.Visaka Industries would be implemented from October of this year.
- ✧ Workshop to sensitise NGOs on solar dried foods for income generation and nutrition security will be conducted during the month of November 2015
- ✧ Three M.Tech., students from Department of Food

Technology, Osmania University, Hyderabad would be carrying out their project work at SEED Laboratory starting from 16th November 2015 as internees.

- ✧ Training programme on "Post Harvesting for fruits and vegetables for sustainable livelihood using Solar Energy" will be conducted in the last week of November 2015.

VIP COMMENTS

"Awesome and utterly creative technology for the benefit of humanity"

Prof. Apparao M. Rao, R.A. Bowen Professor of Physics, Clemson University, South Carolina

"Technology developed by SEED for processing in horticulture very impressive. We look forward to use the same in commercial way."

Sri. R.K. Agarwal, Dy. Director, National Horticulture Board, Hyderabad

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Successful International 'SEED' Training Programme at Zanzibar

Interview With Mrs. R. SHYAMALA



Zanzibar Technology and Business Incubation Centre (ZTBI) initiation of Ministry of Empowerment, Social Welfare, Youth, Women & Children of the Revolutionary Government of Zanzibar, under the guidance of Dr. Rajeev

Aggarwal, Expert & Technical Advisor.

Agri business is one of the priority sectors of the Government of Zanzibar. ZTBI has therefore integrated Solar Dryer Technology developed by SEED to help the youth and community towards self employment. This approach finds a solution for preservation with long shelf life and for self employment. Solar Dryer Technology will process the food products with Zero Energy Cost.

SEED has supplied a Solar Cabinet Dryer - SDM-50 to process fruits and vegetables dehydration and conducted a training programme at ZTBI, Zanzibar, East Africa. Mrs. R. Shyamala, Gen. Secretary of 'SEED' has travelled to Zanzibar and conducted the training programme during 8-13 July, 2015. About 45 youth-members of the ZTBI and other entrepreneurs have attended this program. Ms. Shyamala has conducted the practical training & theory classes on processing of fruits (Mango and Guava) and vegetables (Carrot, Spinach Muvje, Chinese Leaves and Tomato), packaging, quality control and hygiene, etc.

How was the training program received by the participants?

The participants were very enthusiastic to learn innovative solar food processing technology. About 45 participants (Female 25 & Male 20) attended the training programme, organized by 'SEED' at ZTBI, Zanzibar. They learned solar dehydration processing of Mango, Guava, Curry Leaves, Spinach, Carrot, Tomato Muvje & Chinese leaves using 'SEED' Solar Cabinet Dryers. During the training period we installed the dryer, and demonstrated dehydration process in practical training and theory classes, which are highly appreciated by the Ministry and the participants.

What is the scope for solar cabinet dryers in Zanzibar?

There is a lot of scope for 'SEED' solar cabinet dryers. Mrs. Asha, Principal Secretary, Ministry of Agriculture and Natural Resources expressed their willingness to establish Micro enterprises with 5

dryers for processing of fish as fish is a staple food in Africa. Also Guava, Mango, Pineapple fruits, etc available.



Do you see any opportunity for SEED technology in East Africa?

There is great opportunity to establish incubation centre like one was already established in Zanzibar. The incubation centres will cater the needs of local entrepreneurs with the financial help of Government Agencies. One order for Solar Cabinet Dryer-SDM-50 is under process for Kigoma.

What is your overall impression about your visit to Zanzibar?

My impression is that 'SEED' could confidently implement the overseas trainers training programme for solar food processing of fruits, vegetables and fish. The developing countries are very much in need for low cost innovative, economic and environmental friendly technologies. If they are available, the technological gaps are minimized for better economy of the entrepreneurs.

Do you think SEED R & D Lab need to work on any specific projects to promote our technology in East Africa?

This is like organization to organization and Government contacts are very essential to materialize the specific collaborative projects for promotion of innovative technologies as large quantities of fruits like Mango, Guava, Pine apple, vegetables like Spinach, Curry leaves, tomatoes and fish are available. For processing the above, they need technology.

Participants Feed Back - Mr Bakri Hassan Mangopo – Thanks so much, I really appreciate your teaching and helped me in deciding to choose my career.

Mr. Khamis Mussa Khamis It was very clear understandable and usefully to my future ambition and was really excited to learn hygienic way of food processing. I learned technical way in practical processing of Mango, Leafy vegetables, Quality control and packaging.

R & D Activities

SEED's Research Log Book - Apricot Fruit Bar



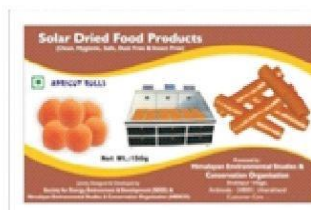
Apricot (*Prunus armeniaca*) is an important fruit crop of mid hill and dry temperate regions of India. Apricot is grown commercially in the hills of Himachal Pradesh,

Jammu and Kashmir, Uttar Pradesh and to a limited extent in north eastern hills. The fruit is delicious and is rich in Vitamin-A and Potassium. Apricots contain carbohydrates, proteins, phosphorous and niacin more than many other common fruits. Apricots are an excellent source of vitamin A, and a good source of vitamin C, copper, dietary fiber, and potassium. Apricots contain phytochemicals called carotenoids, compounds that give red, orange and yellow colors to fruits and vegetables. The powerful antioxidant Lycopene is one of the carotenoids found in Apricots. Delicious Apricot taste can be processed in to dried fruit and into a bar to relish the taste by consumers in non-growing areas.

Benefits: Apricots are rich in many plant antioxidants. The protective effects of antioxidants while adding very few calories to your daily total. Apricots are a good source of dietary fiber. Within the total dietary fiber provided by apricots, about half consists of soluble fiber. Soluble fiber is one type of fiber that can help to control blood cholesterol levels. Other health benefits of apricots are, protection against free radical damage, protection of eyesight and protection against Inflammation, etc.

Ingredients: Apricots, Sugar, Liquid Glucose, Citric Acid, Pectin, water and Class-II preservative.

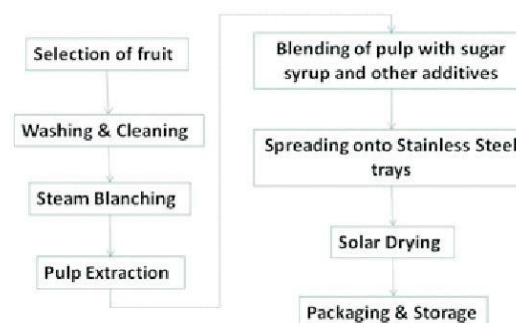
Preparation of pulp: Apricots of good maturity are selected and sorted for uniform size and weight. Grading is carried out for damaged fruits. Then the graded fruits are deseeded by slitting using a knife. The sliced fruits are then steam blanched and passed through a pulper and homogenized pulp is extracted.



Bar Preparation: The pulp obtained was collected in a vessel and blended with sugar syrup and other class II preservatives and spread onto stainless steel trays

which is to be solar dried for 16 sunny hours for 2 layers and cut into convenient slabs/rolls/bars and packed in suitable packing material for longer shelf-life.

Flow Chart



Solar drying data of Apricot Fruit bar

Loading capacity kg/m ²	Yield (%)	Product moisture (%)	Drying hrs	Cabinet temp.	Ambient temp.
9	32	12	16	55	30

Nutritional values (per serving = 20 gm)

Total Carbohydrates	14.4 gm
Protein	0.32gm
Total Fat	0 gm
Saturated Fat	0 gm
cholesterol	0 gm
Sodium	87.6mg
Potassium	79.6mg
Calcium	32mg
Iron	0.0392mg.

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