SEED COMMUNICATIONS

A Quarterly News Letter from

Society For Energy, Environment & Development

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FROM THE DESK OF EDITOR

July - September, 2014

AGENDA FOR RURAL INDIA

It is well appreciated that development of Indian economy as a whole is intimately tied with that of the rural regions. However, the ground reality today is that rural India is urgently in need of massive support and attention. The greatest problem troubling rural India is that it is not able to support itself by the wealth it generates through the cereals, fruits, herbal products, forest produce etc. To understand this problem, one needs to examine the structure and the production apparatus of a rural society.

In a rural society, the farmer is at the centre of economic structure. His basic asset is land, but while trying to get the required financial inputs he gets into difficult economic situations. Further, the final product offered by him is without any value addition and the marketing channels are not favourably disposed to his welfare. As a result, the farmer and, along with him the entire village community, suffers. This is the present debilitated condition of Rural India despite India being the largest producer of cereals, fruits and vegetables.

It is at the important stage of value addition to rural produce that SEED decided to help with its technical expertise and experience. SEED examined the entire supply chain from idea to market and identified the following points for intervention.

1. During periods of unfavourable market conditions, the farmer should have the technical means to wait for the opportune time, when he can present his product in a form which attracts the market.
2. The farmer should have the technological apparatus to convert his basic product into the required value added form.

To help the farmer offer a market -friendly value-added product, SEED set for itself the task of developing a low-cost and low-maintenance technique of high efficiency for preserving farm products for a long time. Identifying the age-old technique of dehydration of the product as the best solution and solar energy as the best low-cost input, SEED developed a highly efficient solar cabinet dryer (inventor: Prof. M. Ramakrishna Rao, Patent No.211911). Using the dryer, they perfected product-specific food processing techniques as a result of intensive research of over 25 years in their own in-house R & D laboratory. This award-winning pioneering work has ushered in the new discipline of Solar Food Processing Technology (SFT), with its great potential for helping the Indian and the World farming community. It has also developed a test market for the value added products to assure the farmer of the market acceptability of these products.

Now, in order to implement the logical next step of taking this technology to as many rural communities as possible, massive Government intervention is required. The following specific steps are suggested for implementation:

1. To establish a large number of village/mandal level integrated solar food processing (SFP) centres equipped with solar coolers, solar dryers and quality control lab, based on the technology developed at SEED. These country-wide centres should be financed under either the Private-Public- Partnership (PPP) scheme or exclusively by the central govt.
2. Regional test laboratories (RTL) should be established in all the states to provide technical support to the village level SFP centres.
3. To encourage women Self Help Groups (SHG) to become stakeholders of the SFP centres as rural entrepreneurs.
4. Eventually these centres would be engaged in the production of a nutrition-supplement drink fortified with micro-nutrients based on natural foods. Such drink developed by SEED would be used to combat malnutrition in students of 6 - 16 years of age in govt schools, especially in tribal areas.
5. Another area that deserves serious attention of the govt is with regard to the existing taxation structure applicable to the food processing sector. Considering that the food processing sector is a sun-rise industry growing at a CAGR of over 8% over the last five years and it is overwhelmingly export-oriented, it deserves to be encouraged through tax holiday / tax waiver and other such tax concessions.

SEED laboratories can participate in this endeavour at all the stages by providing technological and laboratory expertise wherever required.

- Prof. V.V. KUTUMBARAO
President, SEED

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NEW CONCEPT OF DEHYDRATION

Osmo-Solar Dehydration of Fruits

R. Shyamala*, I. Praneeth** & A. Lavanya***, SEED, Hyderabad

New Process of osmo-solar dehydration:

The dehydration process of fruits is an important step in Food Processing Technology. The dehydration process not only preserves the fruits with good shelf life but also increases the value addition to the product.

The drying process is one of the best techniques by which fruits are preserved. However, electrical drying process is highly capital intensive and energy intensive. The shortage of power and cost of the power in our country limits the processing of fruits for preservation. Hence, one has to look for the technology for conserving the energy and processing the fruits with no energy cost.

With the advent of new and unique technological innovation of 'SEED' Solar dryer technology, the solar food processing activity has gained momentum on micro level. This initiative resulted in osmo-solar dehydration technique. This helps in developing micro enterprises at different localities in processing of fruits and vegetables.

For the first time on a commercial scale the process was carried out on five fruits such as mango, guava, pineapple, banana & chikku in higher capacity solar dryer.

The osmo-solar process conserves the energy utilization to about 50% by osmosis technique and the rest of the drying process is carried out in the solar dryer with no energy cost and the process will reduce the drying time into half.

Osmo-Solar Dehydration Process:

The Process of osmo-solar dehydration of fruits starts with selection of raw materials and cleaned thoroughly followed by slicing and Steam Blanching. The Blanched slices were steeped in sugar syrup overnight and then washed to remove surface sugar syrup. The slices were loaded in SS trays and dried in solar cabinet air dryer and dried for 10 - 12 hours. The dried slices were then subjected for sweating for 7 - 10 days for moisture equilibization and packed and stored in cool and dry place.

S. No.	Parameters	Value per 100g				
		Mango	Guava	Chikku	Banana	Pineapple
1	Energy (Kcal)	317.783	252.266	311.741	307.698	326.78
2	Moisture (%)	17.04	13.65	12.28	18.37	11.01
3	Protein (%)	2.35	4.75	2.1	2.94	2.62
4	Fat (%)	1.65	1.674	3.485	0.778	0.692
5	Carbohydrate (by differenes) (%)	73.36	54.55	67.994	72.23	77.518
6	Total Dietary Fiber (%)	5.588	25.376	14.141	5.678	8.16
7	Vitamin A (IU)	2834.61	2199.28	120.07	104.83	227.58
8	Vitamin C (mg)	31.43	560.39	9.005	8.59	128.01
9	Calcium (mg)	51.95	4.93	79.38	39.44	124
10	Iron (mg)	4.82	1.34	3.54	0.83	15
11	Sodium (mg)	96.49	27.46	16.72	2.32	215.14
12	Potassium (mg)	760.83	454.36	762.63	830.78	229.4

On April 23rd, 2014 to commemorate its 27th foundation day, SEED has launched five new products (Dried fruits) into the test market. These fruits are dried by special process for value addition and preservation with long shelf-life. These Fruit Slices can be eaten directly as fruit slices or in rehydrated form in the fruit salads. They can be also used in ice cream topping and custards.

The farmers should take the advantage of this great technology invented by SEED for value addition of fruits and vegetables with zero energy cost. This enhances income to the farmers.

Acknowledgement:

Catalyzed & Supported under Core Support Programme, SEED Division, Dept. of Science & Technology, New Delhi.

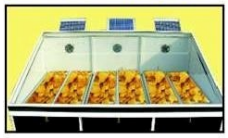
Solar Dried Mango Slices

Solar Dried Guava Slices

Solar Dried Banana Slices

Solar Dried Chikku (Sapota) Slices

Solar Dried Pineapple Slices



Solar Dehydration of Mango Slices

FUTURE ACTIVITIES

- Four day Training programme on "Skill development for employability through processing of carrot, Beetroot, Tomato and Curry leaf Powder with zero energy cost" from 9th to 12th September, 2014.
- Two day training programme on "organic farming technique" from 11th to 12th November, 2014.
- Four day Training programme on "Osmo-Solar processing technique of fruits for energy saving" from 9th to 12th December, 2014.

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Four Day Training Programme on Value Addition and Preservation of Fruits With Zero Energy Cost

Four day Training program on "Solar Food Processing of Fruit Bars for Value addition and Preservation" from 24-27 June, 2014 at Hyderabad

Post-harvest losses in India are estimated to be 30% of the fruits. Food processing and preservation can reduce wastage of harvest, allow storage for food shortages, which facilitate export to high value markets. Drying is one of the oldest methods of food preservation. Drying makes produce lighter in weight and less likely to spoil.

The energy scenario in India is complex and facing many problems. The demand for energy is increasing day by day with the increase of industrialization. It is anticipated that the deficit between demand and supply of energy is going to be 10 to 15% by every year.

Renewable Energy sources like solar energy can be used for drying of food and agricultural commodities with minimal impact on nutrient loss. This solar drying enables good manufacturing practices and yield export oriented processed foods with long shelf life.

To address the above issues SEED conducted a training program on "Solar Food processing of Fruit bars for Preservation and Value addition" from June 24th to 27th, 2014. The main objective of this course is to develop the skills in processing the fruits for value addition and preservation, to develop the hands on experience through practical's in processing of fruits and to conduct Physico chemical, organoleptic, microbiological analysis in the products for quality control.

Participants from different backgrounds from different locations attended the course. The participants are exultant about the learning process of the fruits of Mango, Guava, Chikku and Mixed fruit bars. Participants attended from different organisations like Defense Food Research Laboratory (DFRL), Central Tobacco Research Institute (CTRI), Andhra University, Dolphin Zebra Frozen Foods Pvt. Ltd, Ecospace Green Solutions Pvt. Ltd, NVIS Technologies Pvt. Ltd and Child Heaven International Home for Children & Women. The training programme was integrated with practical session and class room sessions on processing of Mango, Guava, Sapota & Mixed Fruit Bars and the Quality Control. The Lectures were given by foremost scientists in their field and covered most vital sessions on solar drying technology in application to food processing, Quality Control Methods, Analytical Techniques, HACCP, ISO and Food security & Regulations, Nutrition and its importance, Preservation of Fruits by different methods, Marketing Strategies, Food Microbiology, New Product Development, Packaging Methods & Shelf life Studies along with Solar Cabinet Drying technology and Applications.

On overall four day training programme the trainees gave feedback that the training programme was very useful and it presented an overview on solar food processing technology. The training material distributed by SEED during the training programme was very helpful. Participants are interested in the intensive training programme for 10 to 15 days to gain more hands on experience. The trainees were enthusiastic for setting up solar food processing unit for processing of fruits & vegetables for value addition & preservation.

VIP COMMENTS

My visit to SEED was an exhilarating experience. I am extremely impressed with the work that is being done to adopt solar technologies in food processing. The efforts of SEED in adding value to the food products particularly in fruit processing are very laudable. The solar dryers developed by SEED will be a big boon in preventing food waste as well as in adding financial muscle to the farmers. I wish the organization all the best and it will be a privilege for me if I can be any help in taking forward the efforts of SEED.

Dr. K. Satya Gopal, IAS. Director General, N.I.P.H.M., Hyderabad.

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Centum Rakon India Awards ₹ 10 Lakhs for Nutrition Drink to Students of Mathru Education Trust, Bangalore

Enriched Nutritive Drink

Centum Rakon India Private Limited has awarded a project entitled "Enriched Nutritive Supplementary Drink to distribute to the students of Mathru Educational Trust for visually challenged children" to Society for Energy, Environment & Development (SEED), Hyderabad & R & D based NGO. The project sanctioned value of Rs.10,00,000/-. This project will be implemented by SEED commencing from July 2014. This is served regularly as Enriched Nutritive Supplementary drink for 100 students of Mathru Educational Trust for visually challenged children, Bangalore.

Centum Company Profile

Centum Electronics was founded in 1994 by Mr. Appa Rao Mallavarapu in Bangalore, India. Since then, Centum has rapidly grown into a diversified electronics company operating across different industry segments and offering a broad range of products and services. It has established truly world-class manufacturing facilities which today are spread across 4 locations in Bangalore.

Centum Rakon a joint venture between Centum Electronics Ltd, India and Rakon Ltd., New Zealand, is engaged in the design and manufacturing of high performance frequency control products for the Telecommunications, Industrial, Defense, Aerospace and Space markets.

Mathru Educational Trust

Mathru Educational Trust is non-profit, non-governmental voluntary organization set up to teach life skills and vocational skills to the visually impaired and provide them with education, economic stability and confidence to survive and succeed in an increasingly complex world. This school provides free education from Grade one to Grade ten. The school is registered with the Department of Empowerment of Differently Abled under the Ministry of Women and Child Welfare, Karnataka.

The activities of Mathru are:-

1)Mathru Free residential school for the blind, 2) Mathru Computer Learning Centre

3)Mathru Academy of Art, Music and Dance, 4)Mathru Braille Printing Press

In addition to these activities, other activities under new project for community at large, they are - 1) Free Computer coaching classes for the under privileged children, 2) Teachers' Training programme in association with community based rehabilitation network,

3) Manufacturing and free distribution of sanitary napkins for the under privileged girls studying in rural areas and other income generating unit employing three under-privileged women from the rural sector.

Case study

This Enriched Nutritive Supplementary Drink formulated and developed by SEED with the sponsorship of Bharat Dynamics Ltd., Hyderabad in 2013.

This nutritive supplementary drink will contain natural foods like spourted ragi malt, Soya flour, Tomato, Amla and Carrot powders, skimmed milk, sugar, cashew, etc. and containing micro nutrients to combat malnutrition among the children coming from poor families. This will supplement Protein, Calcium, Iron, Vitamin-A & C, which meets 20% of RDA value and combat malnutrition among children.

A similar programme was successfully implemented by SEED for distribution of Enriched Nutritive Supplementary Drink to 250 students of SMS Z.P. High School, Tholukatta Village, Moinabad Mandal for the academic year 2013-14. The results are very encouraging and SEED wants to serve Enriched Nutritive Drink for more students.

MESSAGE FROM :

Mrs. Harsimrat Kaur Badal, Honorable Minister of Food Processing Industries, Government of India.

In reply to our heartiest congratulations on taking charge as Minister of Food Processing Industries, Government of India.

"Thank you very much for your good wishes on my induction into the Union Cabinet and on assuming the charge as the Minister for Food Processing Industries.

Your greetings and good wishes shall go a long way in inspiring and guiding me in discharging my duties and responsibilities as the Minister of the Government of India".

- Mrs. Harsimarat Kaur Badal
Minister of Food Processing Industries,
Government of India.

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