

**INTRODUCTION OF SOLAR DRYING BY NGO
NARMADA IN NIMAR REGION OF MADHYA
PRADESH STATE OF INDIA UNDER THE
GUIDANCE OF BARC,GOI.**

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ABSTRACT- *Solar driers of various designs and sizes to be used for providing low cost food preservation/processing method for agricultural produce and thus provide employment. Area of operation i.e. Nimar Region of Madhya Pradesh, India receives at least 270 days of sunlight and temperatures soar up to 49 c during summers. This geographical advantage is conducive for spread of this technology whereas challenges of socio-economic condition need to be addressed. Awareness is being generated for 2 designs currently available and work on a 3rd design is in progress.*

KEYWORDS- *SOLAR DRIERS, INDIA, BARC, RURAL EMPLOYMENT, WOMEN EMPOWERMENT*

1. Introduction

Nimar Abhyudaya Rural Management & Development Association (to be referred as NARMADA), is a NGO operational in the Nimar Region of Madhya Pradesh, India, for the past 8 years. (1) Primarily, the institutions focus was on providing education to deprived children in rural areas near the city of Mandleshwar. But gradually it was observed that the amount school drop outs was very high and many students left education only because the schools were far. NARMADA, then focused on such students. (2) After lot of efforts, 5 boys from the LEPA village successfully completed a diploma in Basic Rural Technology from Vigyan Ashram, Pabal. They are now skilled workmen and experts in electrification, carpentry, plumbing, welding and other fabrication. Their skill needs to given a direction. (3) NARMADA, has been using solar technology, be it cooking, electricity or very recently drying for quite some time. The interest shown by these young minds in solar technology was encouraging, and hence NARMADA started making solar dryers. (4) This paper contains details of how it started, Nimar region, what is the aim, who are the partners, what problems we face and what can be done?

2. How it started ?

It was during a training program at Dr. Mrs. Janak Palta Mcgilligan (Janak Didi) place 'GIRIDARSHAN' at Sanawadiya, Indore, that the karyakarta's (volunteers) of NARMADA were introduced to solar drying. We saw the tunnel dryer on her roof and also the dehydrated products. During our 3 day stay at Giridarshan, we observed the dryer for almost 3-4 times everyday.

The idea of preserving agricultural produces at low cost had clicked in our minds. (2) One student from NARMADA, Shankar Kewat, came back to the ashram and after some research on internet, fabricated 2 solar dryers in a single night. One was of the tunnel type and the other of the cabinet type. The test results were encouraging. Shankar then went ahead and fabricated a model of the tunnel dryer and presented it at a State Level Science Competition and it won him the first price. This is where the journey begun.

3. The Nimar Region.

Nimar region lies in the southwest of Madhya Pradesh state of India and comprises of the Khandwa and Khargone district. The holy river Narmada flows through the region and Narmada along with its tributaries and distributaries is the lifeline of the region. In the past few years, Nimar has shown tremendous development in the field of agriculture. Primary reason for it being the advancements made in the irrigation sectors. Dams, large & small and the widespread network of canals have ensured that water is available to farmers throughout the year. (2) Farmers are now able to harvest 2-3 and sometimes 4 crops in a year. Primary crops are chilly, wheat, maize, tomato and soybean. Chilly of Nimar is famous throughout the world and is exported to various parts. (3) However, sometimes the farmers have to throw away a large part of their produce, specially tomatoes and chillies. There are two reasons behind it. One, being the lack of proper transport facilities and two, fluctuating rates of the market.

4. What is the aim?

(1) This is where solar driers come into the picture. A part of the produce of tomato and chilly, which the farmer throws away, can be dehydrated and stored. The technology is cheap and user friendly. (2) Domestic solar driers can be a great tool for creating women entrepreneurs. Also it can be used to give employment to rural youth. Our primary aim is to promote the usage of solar driers in the villages of Nimar region. The fabrication process itself will give employment to youth. (2) Secondly, we aim to develop our own brand of solar dried products. This will help provide a direct market to the users of solar driers.

5. Who are the partners?

(1) After research on the internet, we found out about a solar dryer developed by Bhabha Atomic Research Center, Mumbai. BARC is a premier research institute which works under the government of India. They, under a program called 'AKRUTI', transfer this technology to the NGO's on subsidiary basis. NARMADA tied up with BARC in April 2017 and to date has manufactured 6 solar driers of BARC design. (2) Unconditional support of Shrikrishna Gupta Sir, Head, Technology Transfer & Collaboration Department, BARC, has been there right from the word go. He hails from the Nimar Region and his love towards his homeland has been visible in his support. (2) The pilot project was funded by Bharat Yuvotkarsh Nyas, Pune, India.

6. What are the problems we face?

(1) 80% of farmers in India have small land holdings. They live hand to mouth. The income they generate from one crop, they use it to sow the next crop. (2) The bigger farmers are happy with whatever they earn and seldom look to explore new avenues. (3) Age old practices of preservation are prevalent and the current generation of farmers is cynical about any new technology. Roof top drying in the open is a common practice, but it does not ensure hygiene and is time consuming. (4) A farmer gets busy in preparation of his next crop as soon as he harvests. So it is not possible for him to get involved in the process of drying and preserving his produce. (5) Solar dryers have limited capacity and thus it is not possible to process and preserve bulk produce.

7. What has to be done?

(1) Promotion and training of Solar Driers among landless labors. When they do not have occupancy as labors, they can generate income. Solar Dried products will provide secondary/additional income to them. (2) Create SHG's (Self Help Groups) in nearby villages who will use solar driers. (3) Provide training in drying and packaging of dried products. (4) Create and establish a brand and provide a market to end users. Proper acquisition of products will ensure spread of technology via word of mouth. (5) The brand equity of BARC will

generate interest and genuineness of process and hence BARC design and approvals are linked.

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8. Conclusion.

(1)India is taking giant steps to promote use of solar energy. This is the right time to become a part of the revolution and take solar technology to every doorstep.(2)Solar Technologies can be best utilized in the rural areas as it can very easily fulfill the demand and supply chain. Also space is easily and cheaply available in rural areas.(3)To promote it in rural areas, solar technologies need to be subsidized. Panels are subsidized but solar dryers need to be subsidized as well. Larger, global organizations must start this process. Their initiative will generate trust and lead governments to help the sake.

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