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Lantern that cooks

21 February 2013

An innovative multi-purpose device, which lights up a room, cooks food and boils water, is changing the lives of rural poor and also providing clean environment in western Maharashtra, reports K V Venkatasubramanian

Young Puja Mohite, her mother-in-law Indubhai, Savitri Pawar and Bharati Ranavre from Nimbhore, Garpirwadi, Chaudharwadi and Vadzal villages around Phaltan in Maharashtra would trudge miles to collect firewood to light up the hearth in their huts, while their menfolk toiled in the farms. After spending hours, the women would return to spend the entire morning cooking a meal on flickering chulhas (conventional wood-fired mud stoves) with their eyes watering and burning from the smoke that engulfed their shanties. At nightfall, the family would sit in the open as these villages still crave for electricity ~ but, not anymore.

A scientist from Phaltan has helped end their drudgery and brought immense relief and cheer to these villagers by providing them with a multi-utility energy-saving appliance which boils water, cooks meals and provides lighting too (illumination equivalent to that of a 300 watt bulb).

Environmentally clean

Called Lanstove, the apparatus is a combination of a lantern and a cook stove that runs on kerosene as fuel. Being smokeless, it is environmentally non-polluting, noiseless and emits no smell or soot unlike regular kerosene lanterns or stoves. "Also, because of the excellent combustion, kerosene becomes a very clean fuel for rural households ~ nearly equivalent to LPG," said Anil Rajvanshi, Director, Nimbkar Agricultural Research Institute (NARI), Phaltan, in Maharashtra's Satara district, which developed the innovative device. Tests conducted by the non-profit institute showed that the carbon monoxide level generated by Lanstove was very low as compared to that produced by chulhas, he added. Besides, the lantern-cum-stove is easy to use and safe to handle. Its flame, and hence the heat from it can be controlled by flipping a valve. There is no risk of fire outbreak as is the case with regular kerosene lanterns, pressurised kerosene stoves and conventional chulhas. It comprises a nine-litre pressurised kerosene cylinder, high light output lantern (mantle lamp), a steam cooker made of mild steel and three stainless steel containers. "To our knowledge, this is the first device that simultaneously provides excellent light, cooks a complete meal of rice, dal and vegetables for a family of five and boils 10 litres of water for drinking. This results in tremendous energy efficiency and saves fuel. Even chapattis and bhakaris can be made using a specially designed skillet (tava)," he told this correspondent who visited the institute and the

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villages, 110 km from Pune.

Better life quality

Rajvanshi said about 60 per cent of rural population in India lives without electricity and consumes 200 million tonnes of biomass annually for cooking using primitive stoves. "The old and inefficient kerosene lanterns used by them produce inadequate light. With the existing kerosene consumption of nine million tonnes a year, Lanstove can drastically improve the quality of life of 180 million people in rural and urban areas," NARI believes.

Lanstove is a newer version of a device running on ethanol-water mixture that NARI had developed earlier; for which it won the prestigious Global Award for 2009 from Sweden. It stores kerosene in a pressurised cylinder, eliminating the need for frequent pumping as required in kerosene stoves. Besides, it is quite silent as compared to kerosene stoves and petromax lamps. The pressurised kerosene vapour lights up the mantle (similar to the one used in a petromax lamp) producing excellent light while the hot flue gases generated turn the device into a cooking stove, Rajvanshi said.

Women relaxed

The ceilings of the thatched huts of the villagers have turned jet black with soot from the firewood mud stoves they used earlier. Women using the new stove are much relaxed as there is no physical exertion in collecting wood/biomass. Absence of smoke has led to improvement in their health. They have ample free time to rest or do some other chores. They are able to look after their children. The bright light from the device helps the dwellers in performing several tasks, like cleaning grain.

The Mohites and Pawars are quite delighted at the provision of lighting inside their hut. Savitri expressed happiness at the riddance from chulha smoke. "My eyes do not itch anymore and my headache is gone." The educated among them, like Puja Mohite, 22, teach their kids, stitch clothes and earn some income. "I help my two sons in completing their homework and they study at night," she said.

Running cost

Based on the size of household, kerosene consumption varies from 15-28 litres a month; and hence the running cost (one litre for six hours of use per day) is between Rs 225 and Rs 450 a month (at the PDS price of Rs 15/litre). For evening cooking and lighting alone, electric devices (electric stoves and incandescent lamps) consume about three times more energy than Lanstove, the researcher said citing studies conducted by the institute, which plans to undertake largescale test marketing in rural India. The price of Lanstove (including its three pieces) is around Rs 7,000. "It is expected to come down to around Rs 3,000 if manufactured commercially," said Rajvanshi, an alumnus of IIT Kanpur and University of Florida. NARI carried out tests on Lanstove in rural homes (around Phaltan), which had no electricity and distributed 23 Lanstoves to these unelectrified huts for long-term testing and evaluation. It has received a grant of Rs 18 lakh for two years from the Department of Science and Technology (DST) for the pilot project. The institute is also designing a small fridge that will work on the Lanstove.

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