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Comparative study of two models of solar cooker by using different parameters in cooking of rice

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ABSTRACT

The present study was undertaken with the objective to compare the identified models of solar cookers in three seasons (summer, winter and rainy) and two metals (aluminum and stainless steel) for different parameters time and temperature in cooking of rice The study was conducted at Department of Family Resource Management College of Home Science and Women's Development Allahabad Agricultural Institute-Deemed University Allahabad, U.P. India during Jan. 2006 to Jan. 2009. There were average sunshine hours 8.5 per day and sunny days about 250 days/years. It was concluded from the average time and temperature of both solar cooker models (BSC and PSC) gave better performance during summer in comparison to other seasons and also Al cooking pots were best in rice. Better performance was observed of Parabolic solar cooker than Box solar cooker in preparation of rice cooking.

KEY WORDS : Solar cooker, Rice cooking

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Energy is one of the most important inputs in all sectors of a country's development. Global demand of energy is inflating everyday causing concern for the world community. Energy crisis, food shortage and environmental pollution are the main problems, which are faced by mankind today. Solar energy has the greatest potential of all the sources of renewable energy. The power intercepted from the sun is thousands times larger than the present consumption rate on the earth of all commercial energy sources (Sukhatme, 1999).

Rai was found in India, energy consumed for cooking, shares major portion of the total energy consumed in a year (2006). In India about 70 per cent of people live in villages. One of the most important activities of villages with regard to energy consumption is in household activities. Singh and Sahay (2001) conducted a study at CIAE Bhopal and reported that household activities consumed 78.6 per cent energy inputs of a village. Most of the energy in rural home is for cooking. In a study of energy use pattern in a typical village of Bhopal district, Ganguli and Pandey (2001) found that nearly 74 per cent of the energy used in the village was for cooking alone.

Box solar cooker:

Box cookers cook at moderate to high temperatures and often accommodate multiple pots. Worldwide, they are the most widespread. A box solar cooker is a slow cooking device useful for small families. It can cook four dishes at a time and save around three LPG cylinders in a year if used regularly (Anonymous 2003).

Parabolic solar cooker:

A parabolic solar cooker cooks fast at high temperatures but requires frequent adjustment and supervision for safe operation. A common pressure cooker is used for cooking. The parabolic solar cooker is a fast cooking device useful for home. It can cook all type of food including chapattis for about 10 to 15 persons, each dish is cooked in about half an hour. The cooker can save around 5 to 10 LPG cylinders depending upon its use in homes or small establishments in one year. (Anonymous, 2003).

Utilization of solar energy is of the great importance in India, since it lies in a temperate climatic region of the world where sunlight is in abundance for a major part of the year. Many advanced and developing countries including India are developing several cooking devices based on solar energy. The domestic cooking devices are solar cooker, solar oven, solar steam cookers etc. The solar cooking devices have long life (10-15 years) and require easy installations. In our country energy consumed for cooking shares a major portion of the total energy consumed in a year, which is mostly, received from