

A DESIGN OF SOLAR ENERGY CROP DRYER**B.R.K. OBEYESEKERA AND A. ELANKATHIR***Department of Mechanical Engineering, Faculty of Engineering,
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This paper discusses how to improve the qualitative characteristics of cereals by utilizing the Solar Energy Ventilating systems. As the economy of the rural community of developing countries is mainly based on their agricultural crops, securing the quality of the product would be one of the main and essential aspect in agricultural industry. As harvest of the various crops is reaped in different time during the year, it requires the necessity to keep the crops for longer period of time without causing any damages to them. Damage can be caused by insects, fungal, thermal etc. High quality of agricultural crops such as cereals, make available to draw foreign currency in to the country in to the country and also crops will be marketed as high quality product by maintaining its moisture content, color shape, sizes and so on. In village community, the farmers who deal with cereals in small scale, finally sale to the whole sale dealers. At most of the time, the product itself shows poor quality subjected to different undefined techniques of drying. As a result of this most of the cereals end up with fungal attacks and discolour of products as they are exposed to the moisture environment and the direct sunlight. Hence the total quality of the cereals naturally falls down.

Further the paper discusses the methodology to solve this problem. It is suggested to have a Solar collector system, hot air of which passes to a chamber in which the cereals are kept for further drying after initial drying of direct sun light.

As the experimental study is new in this nature (crop drying) and it gives couple of recommendations and values of parameters of the geometrical configuration of the Solar Energy ventilator for different types of cereals. The temperature and the flow of hot air can be controlled by changing the geometry of the solar collector. Further the experimental study shows that serious limitations for the diameters of inlet and out let of solar collector ducts. This new mathematical models show how to control the flow and temperature of the air flow in order to run with maximum gain more heat. A design of solar energy collector is now been constructed at the Nawa Nilambe Estate for drying of 1000 kg. of Pepper, Coffee, etc.