

DEVELOPMENT OF FORCED CONVECTION SOLAR ONION DRYER

A PROJECT REPORT

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ABSTRACT

Onion (*Allium cepa*) is one of the most popular vegetable that form of daily diet. In India, onion is an important commercial crop. It is widely grown in different parts of the country. At present, India stands second larger producer of onion in the world, next only to China. Indian onions are famous for their pungency and are available round the year. At least 175 countries grow onions. The major onion producers are Maharashtra, Gujarat, Uttar Pradesh, Rajasthan, Orissa, Karnataka, Tamil Nadu, Madhya Pradesh and Bihar. Maharashtra ranks first in onion production with a share of (18%) in terms of productivity.

After harvesting onions, they have to be dehydrated so that they can be stored for long period of time. The local farmers dry the onions using natural sunlight. Drying in natural sunlight is possible in areas where, in an average year, the weather allows onions to be dried immediately after harvest. The main disadvantages of drying in natural sunlight are, contamination, theft or damage by birds, rats or insects etc., Slow or intermittent drying and no protection from rain or dew that wets the product, encourages mould growth and may result in a relatively high final moisture content.

India lies between the latitude of 7°N and 37°N and receive abundant amount of solar radiation through the year. Solar energy is a renewable source of energy which is available at free of cost. Hence in the present work, an attempt has been made to develop a Solar Onion Dryer. In the present model the air is heated by solar radiation and the heated air is made to flow through just harvested onions. Thus moisture gets removed from the onion and become dried.