

## **Abstract**

Open sun drying (OSD) is the most common method of crop drying in developing countries. Despite several disadvantages, it is widely practiced because it is a simple way of drying. Crop temperature, temperature around the crop, solair temperature, and rate of moisture evaporation are the important parameters in OSD. The thermal behavior of OSD of green chillies, green pea, white gram (kabuli chana), onions, potatoes, and cauliflower was studied. The heat transfer analysis which is mainly dependent on the rate of moisture transfer has also been extended during drying process. A mathematical model has been developed to predict the crop temperature, rate of moisture removal, and solair temperature for a steady state condition. The rate of moisture transfer for potato slices and cauliflower was significantly higher than that in other crops. A fair agreement was observed between predicted and experimental results with coefficient of correlations ranging from 0.8936 to 0.7520, 0.9792–0.4172, and 0.9986–0.9942 for crop temperature, temperature above the crop surface, and rate of the moisture removal during drying, respectively except potato slices.