

1. INTRODUCTION

Drying is defined as the moisture removal process due to simultaneous heat and mass transfer. It is the traditional method of food preservation, as fruits, vegetables, fish, grains and agricultural products, etc.

Grains, vegetables and fruits are agricultural products that are known for their rich vitamins, rich concentration of moisture and low fats. These are seasonal crops and are mostly available during the production season. The demand for vegetables by the growing population has not been met despite the increase. This is has a result of wastes that result from biological and bio-chemical activities taking place in the fresh product and unfavorable storage conditions, inefficient handling, transportation, inadequate post harvesting infrastructure and poor market outlets. The sun drying is still the most common method used to reserve agricultural products like grains and vegetables in most tropical and subtropical countries.

1.1 SOLAR DEHYDRATOR

The main advantages of solar drying are low capital and operating costs and the fact that little expertise is required. The sun drying is only possible in areas where, in an average year, the weather allows foods to be dried immediately after harvest. However, being unprotected from rain, wind, dust, damage by birds, insects and other animals, products may be seriously degraded to the extent that sometimes become inedible and the resulted loss of food quality in the dried products may have adverse economic effects on domestic and international markets. Direct exposure to sun light reduces the quality, colour and vitamin content of some fruits and vegetables. Moreover, since sun drying depends on uncontrolled factors; production of uniform and standard products is not expected. Some of the problems associated with open air sun drying can be solved through the use of solar dehydrator which comprises of a drying chamber and sometimes chimney. The conditions in the tropical countries make the use of solar energy for drying food practically attractive and environmentally sound. Driers have been developed and used to dry agricultural products in order to improve shelf life, product variety and large volume reduction. Most of these either use an expensive source of energy such as electricity or combination of solar energy and some other form of energy.