SOLAR DRYING :

According to FAO reports, Crop loss accounts about 5-10 % (Paddy alone during Harvesting and Marketing : 30-50%),Fruits and vegetables is about 10 to 30 %, Pulses 8-10 %,Food and agricultural Commodities loss is about 20-50%.Drying process alone can reduce post harvest loss of 2-3 %. Uniform drying and quality of product is essential for better marketability. Utilization of renewable energy is essential to reduce GHG emissions. Effective drying mechanism is needed for the hour for enhancing value of agro-produce.

1) **SOLAR TUNNEL:**

Solar tunnel drier utilizes solar thermal energy for drying applications. Its working principle is based on green house gas effect. Studies illustrates that a solar tunnel drier of 0.5 to 1.5 tonnes of product capacity occupy a size of 18.0 m x 3.75 m x 2.0 m. The system possesses semi cylindrical tunnel structure. Solar collector material is of UV stabilized polyethylene with 200 µm thickness. Absorber surface is of cement concrete flooring with special black coating and is provided with equi-spaced chimney for natural ventilation.

2) **Natural convection solar drier:** Drying process is slow, generally requiring 4 to 8 weeks. Drying occurs without forcing external air but with the processing of natural air. Drying and storage occur in the same bin, minimizing grain handling. Generally it has an area of about 3 x 5 m^2 glass sheet fixed at the top at an angle of about 0 to 30^0. Holes are provided at the bottom and at the topsides for airflow by natural convection. Wire meshed black tray is provided to the material to be dried.

3) **Forced convection solar drier:** In these, the collectors are provided with a blower connected with a solar panel and to the chamber where produce is collected. Cold air is blown through a blower into the collectors, which gets heated during the passage through it. The hot air thus available is then used for drying the products kept on the shelves in the chamber.

Conventional method of drying is to spread the material in a thin layer on ground and let it exposed to the sun. Such a method has various disadvantages like,

- Accumulation of dust and harms due to insects
- Wastage of material due to birds
- Larger area required for drying

All these difficulties are removed by using solar drier.