

Malnutrition Matters

FOOD TECHNOLOGY SOLUTIONS

SolarFlex “Small Farm” Dryer

This solar dryer is intended for the small landholder or a family. With a capacity of 10 - 20 kg of sliced wet fruit or vegetables, depending on type of fruit and numerous other factors, this dryer is ideal for high-quality natural preservation in a micro-enterprise setting. At a unit cost between \$1,650 and \$1,900 (depending on size of order), multiple units provide a significant commercial volume at a combined cost which remains economical and substantially lower than large commercial solar dryers.



Model shown with solar air collector set at 0 degrees. The setting of the collector can be easily adjusted between 30° and 0° for the seasonal changes of solar angle or for various latitudes.

The Small-Farm model has three main features which enhance drying efficiency. This compact configuration provides for:

- **Horizontal airflow across the food, which is proven superior versus vertical airflow.**
- **Solar air collector tilts to accommodate any latitude or season.**
- **Entire dryer can swivel on a fixed table so operator can rotate unit to track the sun.**

Large commercial dryers, or their solar air collectors, are unable to be rotated during the day to track the sun. This limitation also favors multiple small SolarFlex units.

Drying rack total surface area is 5.1 sq. M, which is suitable for approximately 15 kg. of “wet” food, depending on water content, thickness of product, etc. Included 40-watt photovoltaic panel drives 4 DC circulation fans. The addition of an automobile battery in the circuit will allow airflow to continue while clouds pass or for some time after sunset.



Older model of dryer shown here.



Workers with St. Lucia Ministry of Agriculture during FAO-sponsored SolarFlex trials. As a result of these trials, they requested 5 additional units.



Finished dried pineapple and "soury" fruit.

It is well known that most fruits and vegetables (or herbs and even fish) are often available in seasonal gluts when the prices are extremely low and vendors and growers can hardly sell for any profit. During such times, consumers and producers can benefit greatly with the practice of drying for later consumption and food security or for commercial sale.

Enclosed drying in a solar-powered cabinet dryer is far superior to traditional sun drying in the open air or in dryers which expose the food to direct sunlight. Drying in the open air is unsanitary and attracts insects and other pests. Meanwhile direct exposure to sunlight either in the open air or in a dryer which lets sunlight in, allows UV rays to penetrate the food which degrades the nutritional content and also causes discoloration and very tough texture.

According to Donald Mercer, PhD Food Technologist and published expert on food drying, ***"Based upon personal experience in a number of countries in Sub-Saharan Africa and Central America, I believe that the Solar-Flex Dryers offer a well-designed alternative to many of the solar dryers currently in use. The manner in which they function is extremely impressive. The design features incorporated into the Solar-Flex dryers have made it easy to use with a minimum amount of formal training and instruction."***

Fr. S.J. Mathew, MD and founder of Solar Alternatives, an NGO in India with experience in solar drying reported: ***"the solar dryer which I got from you was quite useful for quality solar drying. We fixed four wheels on the four corners of the dryer for tracking the entire dryer which again increased the efficiency of the system. We could dry all the seasonal fruits and vegetables in that, like mango, banana, supporta, gooseberry etc. We could get good color and clean dried products."***



Technical Specifications of SolarFlex Small Farm Dryer

- Trays – 8 trays of perforated aluminum.
- Drying area – total tray surface = 5.1 sq.M
- Cabinet construction: Aluminum clad plywood with aluminum framing.
- Photovoltaic Panel – 40 Watts with charge controller
- Battery – 12 V deep cycle automotive type (optional)
- Fan – 4 DC fans, 6 Watts each
- Glazing Material – tempered / textured solar glass
- Solar collector - corrugated and painted steel with aluminum frame.
- Solar collector can tilt from 0 to 30 degrees
- Entire assembly can swivel 360 degrees

For more info:

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