Dried Fruit

Adding Value by solar drying your fruit and then selling the produce in your community at a profit!

START UP COSTS: US$130
PROFITABILITY (time/output): US$184 over 3 months based on sales of 1,000 50g bags at US$0.50 each

NEEDED: Small capital investment, raw fruit surplus, access to markets, bagging equipment
BARRIERS: Low profit margins, demand issues

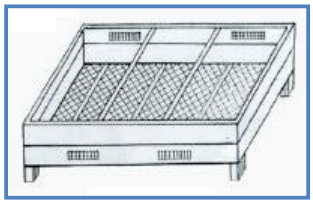
Introduction

Drying fruit is cheap, simple and very effective. Using the power of the sun, a solar dryer can dry almost any fruit and many vegetables. The sun evaporates the moisture content of the food meaning if they are then stored correctly, dried fruit can last for years. Drying fruit is a simple process allowing you 'add value' to harvested fruit, drying and storing it so it can be eaten and sold out of season. It also means fruit that may be wasted at harvest time to oversupply can now be put to a good use! All you need to do to start making money is build a solar dryer, prepare and dry fruit, then package and sell it. This guide will show you how.

What is a Solar Dryer?

A Tent Dryer

Cost: Low / Difficulty to make and use: Easy
Fruit Suitability: Mangoes, Pineapple, Berries, Apples, Bananas, Cherries, Tomatoes, Chillies



Box Solar Dryer

A Solar dryer is a simple construction that uses the sun's heat to prepare food. Solar dryers are wooden structures consisting of a transparent panel above a chamber or collector that is painted black to absorb the suns heat. Fruit or other food is prepared, thinly sliced and laid out on a mesh tray above the dryer floor inside the chambers. The dryer must be well ventilated to let in warm air but protected enough to keep out pests and dirt. Dryers can be cheaply and easily produced out of wood and wire mesh, and placed either on wood stands or bricks. Plastic see-through acrylic is cheap and provides a good transparent panel to cover the dryer. Remember to face the dryer towards where the sun shines the longest during the day – this can be done by pointing it to the equator.
More detailed information on how to build a solar dryer can be found at www.teachamantofish.org.uk .

Should I dry fruit?

There are three factors that will decide whether or not drying fruit is for you:

1) The demand for a particular fruit or vegetable as a dried product;
2) The quality of the raw material, i.e. whether the fruit is suitable for drying;
3) Regular supplies of the raw material.

Unprocessed Mangoes – Sliced in the Dryer – The Dried Mangoes

Advantages of Drying Fruit:

1) Adding Value
Raw fruits often have little economic value, especially during harvest time. A kg of dried fruit can be worth 10 times more than a kg of raw fruit! By drying and processing your fruit you add value to the product, allowing you to sell it at a higher price and greater profit.

2) Long Lasting
Often fruit harvesting is still based on seasons. As a result during harvesting time a particular fruit flood the market, but is then often unavailable outside of season. Dried fruit can last for years if sealed correctly, meaning you can store it and sell it out of season.

3) Transferrable and Lifelong skills
Drying fruits is a cheap, simple and universal process. Involving students gives them clear identifiable skills that they can carry with

them throughout life - even if the products are only used to feed the family (rather than for generating income). After all drying fruit can be used for personal consumption as well as a means of income generation.

5-step Guide to Drying Fruit

Dried Banana Chips

1) Cultivation

The fruit you are going to process first needs to be grown. You can either do this yourself, or if you want to increase production you can buy in fruits from other farmers. If you have the land and capability, cultivating your own fruit can increase your profit margins.

2) Preparation

The fruit needs to be washed, peeled and then thinly sliced and placed onto a tray in the solar dryer. Make sure the fruit is cut evenly and has not been contaminated.

A Solar Box Dryer drying

3) Production

Remove most fruit from the dryer when it is leathery or brittle. When cut in half, the colour should be uniform. Light spots may indicate moisture. The drying period depends on the humidity and the type and size of fruit being dried, but usually takes 3-4 days in a tropical / sub-tropical environment.

4) Storage & Bagging

Once the fruit is prepared it has to be stored appropriately. Packaging needs to be air tight, and can either be in sealed plastic bags or jars. If using bags, buy a bag sealer, fill small plastic bags with 50g of fruit, and then seal them. Sealers cost as little as $50. Make sure the bag is airtight and clean, and that the product is clearly labelled.

5) Selling

Once the product is ready for sales, you will need to conduct quality check, get your product to market, and start making money!

Costing:

Solar drying has a low capital investment requirement, but lower profit margins, as opposed to say, making juice. The figures below are a rough estimate of the costs of making your first 3 months production of 1,000 bags of dried fruit. This assumes monthly production and sales of 330 bags a month – so selling 10 bags a day. If not all bags produced are sold in the first month, this is not critical as they can be stored for up to a year. Production can be slowed accordingly as you finish selling the first batch you have produced.
***Note**: Figures are in US dollars and are estimates based on figures from a Ugandan case study, Practical Action.org and supplier prices.*

Figures:

Start-up Costs

Item	Unit Cost	Unit (s)	Total Cost
Start-up Costs:			
Solar Dryer Construction	$120	1	$80
Labour	$10	1	$10
Bag Sealer	$50	1	$40
TOTAL START UP COST:			$130

Notes:
Bag of Mixed Fruit:
1 Bag = 50g of dried fruit
1,000 Bags = 50,000g / 50kg
1 Mango – 10 slices per mango (30g)
1 Banana – 20 slices per mango (30g)

Assuming:
Cost of a mango (in harvesting season): $.10
Cost of a banana (in harvest season): $0.10
Cost of bag: $0.10

3 Monthly Production of 1,000 bags

Item	Unit Cost	Unit (s)	Total Cost
Operational Costs:			
Packaging	$0.10	1,000	$100
Fruit (Mangoes for 1,000 bags)	$0.10	830	$83
Fruit (Bananas for 1,000 bags)	$0.10	830	$83
Labour	$0.05	1,000	$50
Total Operational Cost:			$316
Revenues:			
Dried Fruit bag (50g)	$0.50	1,000	$500
TOTAL REVENUE			$500
TOTAL PROFIT			$184

Further Information

For further information please visit the Teach a Man to Fish (www.teachamantofish.org.uk) website. For more detailed guides on how to make particular types of dried fruits please see both Practical Action (http://practicalaction.org/practicalanswers/) and CTA (www.anancy.net/index.php?destination=collection&specific=collect&spec_coll=23&subtheme_id=87&language=english)