DRYERS FOR AFRICA

Dealing with produce surpluses

How to deal with seasonal fruit/vegetable/herb/nut surpluses is a problem throughout Africa. There is generally an abundance of produce that cannot be consumed by local communities, with excess going to waste. Small-scale processing in various ways is a solution, with drying and pulp/juice being two possibilities that do not involve prohibitive capital investment.

Apart from surpluses , Africa has many indigenous fruits and vegetables whose potential have not been realized.

Hamish Brebner, owner of South African-based Dryers for Africa, says however that drying and juicing are not particularly widespread in Africa simply because of a lack of "mindset" for them.

Brebner believes that drying is the most practical option for fruits and vegetables – it less complicated than juicing. This is because the technology is basically supplied with the drying unit, which means that little can go wrong. Also, the final product is shelf-stable. By contrast, juice production is highly perishable and therefore requires a greater understanding of food processing technology.

However his company, and most other process technology companies, offer consulting and training in order to gain the best product – be it dried or pulp/juice.

Drying

Drying can be used to:

- Preserve production for later consumption by a community itself.
- On-sell to wholesalers/exporters.
- Produce own-brand products.

Drying technology is also useful for using up fruit that is small, blemished or otherwise unmarketable.
The end product has extended shelf life and lower risks than the fresh product. It is available year-round and storage and transport costs are reduced.
Brebner's company has supplied many drying units in Africa, large and small, over the past 15 years. He says the most popular fruit products that his drying units have been used for has been mango, followed by pineapple, tomato, banana, fruit leathers (mainly guava), peaches, figs, apples and herbs. Generally though, any fruit or vegetable can be dried using the same unit.
He says that Dryers for Africa is especially known for its small-scale dryer units because these are generally overlooked by other suppliers. This has been an important segment of Dryers for Africa's sales.

The solar option – no frills attached

The smallest Dryers for Africa units are for individual, family or community use. In this arena, Dryers for Africa has recently launched the new SD10 solar dryer, targeted at small-scale rural farmers of, for instance, fruit, vegetables, nuts and herbs, who have little or no infrastructure. The SD10 is the next step up from sun-drying in the open. It replaces old "solar box" (which are generally very basic, made of a box with a plastic covering and holes for ventilation). It is more robust and more hygienic than these boxes.
The solar roof, made of polycarbonate, protects the product from rain, insects and dust while maintaining an optimal drying environment. The plastic drying trays are food grade. The unit is light and portable and does not require a supply of electricity.
One square metre of drying area allows this unit to accommodate up to 10kg of wet product per batch.
10kg of wet product would typically produce 2kg of dry product over 2-3 days, depending on weather conditions.
This SD10 costs around $600 ex factory in South Africa.

Electricity

All other Dryers for Africa units require electricity as the standard energy heating source (though gas, diesel and biomass fuel are alternatives), and for powering fans and controls. The smallest electrical batch dryer costs around $3,750, and can work from a single-phase 16A plug point. This holds about 50kg of wet product, yielding about 10kg of dried product.
The pre-prepared produce is packed onto food-grade trays that are then stacked into the dryer. The drying process is normally run overnight, allowing preparation and loading to take place in normal working hours.
In the batch process, after a predetermined time, the process is stopped and the trays are removed.

In production with larger units, trays are stacked onto trolleys which are then wheeled into the dryer.
In a semi-continuous process, where intense production is required, after a predetermined time one trolley is removed (dry) and another (wet) is wheeled into the tunnel. This process can run 24/7 if necessary.

The African continent solution

On a commercial scale, the recommended unit for African conditions is the CD1500 dryer because it is entirely equipped within a refurbished, insulated shipping container. This robust unit stands up to rough handling, particularly delivery.
As the unit is complete, specialised installation is not required, so only commissioning and training fees are applicable. The unit is simply placed on site and plugged in. It is also easily movable.
The drying method is the same as that above. Typically with the CD1500, 1,500kg of wet material would produce 300kg of dry material over 15-18 hours. This containerised unit "package" costs around $30,000.
Larger dryers cost from $34,000 upwards excluding installation (which in countries beyond South Africa might cost up to $10,000 or more).

Juicing

Value-adding to excess produce by pulping and/or juicing is another way to deal with produce surpluses.
Dryers for Africa offers small-scale juicing plants of about 100 litres per hour. However, Brebner warns that a higher degree of skills is required than with drying because of food safety and hygiene requirements, bottling and filling. Post-production handling and marketing is also a challenge, involving blending and branding.
Packaging has been a major obstacle in the past. Bottles are expensive, delicate and require thorough cleaning, and Tetra Pak-type containers require very expensive equipment.
Dryers for Africa has overcome this by offering a hot-filled sachet solution, with a shelf-life of up to six months, unpreserved. Sachets offer very cheap delivery and item costs, can be pre-printed, and are available in a range of sizes.
Bottles can still be used if required with the same filling equipment.
The pulp/juice process offered by Dryers for Africa consists of milling and "finishing" the puree (removing peel and seed); continuous pasteurisation through a tubular heat exchanger; and filling. The whole set-up occupies little space, and electrical consumption is very low. All contact surfaces are stainless steel.
Options are many – for instance:

- The production of process pulp (puree) for on-sale to juice companies.

- Or, a step further, the production of concentrate that only needs water to be added. This can then also be sold on to juice factories or used for in-house juice. Finally, the production chain can start with pulp and end with a ready-to-drink branded item.

Another option is to pulp the fruit, spread onto trays, and then dry into fruit "leathers".
For any type of juicing, training is essential – not only for the understanding and use of the equipment, but also to acquire knowledge of food processing.

Note: Prices quoted are based on exchange rate of $1=R8.

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