

## Case study for banana drying using Aagun™ 24/7 solar dryer

### Aagun™ 24/7 solar dryer -

The PCM based 24/7 solar dryer enables consistent drying. It has the potential to alter the landscape of food drying by replacing inefficient fuel based drying operations and also improving the quantity and quality of yield.

PCM technology in Aagun™ absorbs and stores excess heat during the sun hours which is then released over the rest of the non-sun hours providing uninterrupted drying. It can increase the output by 6 times compared to a greenhouse based solar dryer of the same footprint. The output of the drying is not limited to 6-8 hours of sunshine.

For instance, one Aagun™ dryer occupying a footprint of 42 sq.ft can generate up to 800 kgs of dehydrated fruit in 6 months. While a solar greenhouse based dryer would require a footprint of 250 sq.ft to generate equivalent quantity. When Aagun™ dryer is compared with electric dryer the payback period is approximately 15 months (refer the cost-benefit analysis given below).



Aagun™ 24/7 Solar Dryer

### PLUSS ADVANCED TECHNOLOGIES Pvt. Ltd.

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The process allows for hygienic and constant temperature drying. Also better quality dried product with higher nutritional value, aroma and taste due to controlled drying with no temperature fluctuations. The temperature difference ( $\Delta T$ ) between the ambient and inside drying area is 15–30°C on good sunny days.

**Cost-benefit analysis – Aagun™ 24/7 solar dryer vs electric dryer**

No	Parameter	Drying quantity (kg/day)	Price/kg	No of drying days/year	Aagun 24/7	Electric dryer
					Cost (INR)	
A	Cost of raw banana (fixed)	20	20	270	108000	108000
B	Processing cost (fixed)	20	5	270	27000	27000
C	Capital cost of dryer				160000	90000
D	Total cost (A+B+C)				295000	225000
E	Capital investment w.r.t electric dryer				<b>70000</b>	-
F	Operating cost (21 units/day with Rs. 8/unit for 270 days)				-	<b>45360</b>
G	Payback period, yrs (E/F)				1.6	-
*						
<b>Revenue from sale of dried banana</b>						
H	Sale of dried banana	5	275	270	371250	
I	Earnings per annum from 2nd year using Aagun, (H-(A+B))				<b>236250</b>	



Banana before drying



Banana after drying

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