

# SOLAR DEHYDRATOR PLANS



by:

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ROBERT M. KERR

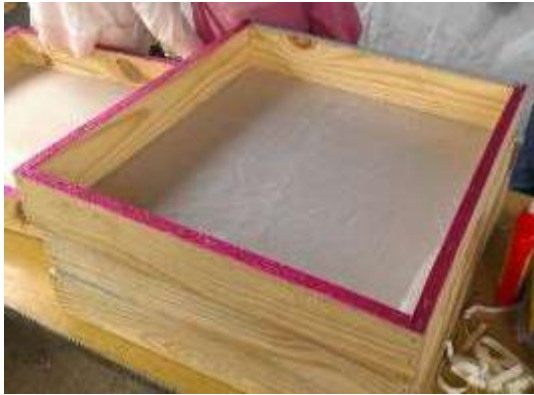
Food & Agricultural  
Products Center

Built and tested in classrooms in rural Nicaragua, 2016

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TITLE		DESCRIPTION	
SOLAR DEHYDRATOR		COVER PAGE	
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Based on a design by: D. Scanlin, Mother Earth News. 2014. Available at: <http://www.motherearthnews.com/diy/tools/solar-food-dehydrator-plans-zm0z14jjzmar>.



TRAY WITH FOAM STRIP



ASSEMBLY



BENDING LATH



INSULATED COLLECTOR



PAINTING LATH



FINISHED DEHYDRATOR WITH DECORATIVE LID/VENT



INSTALLING LATH



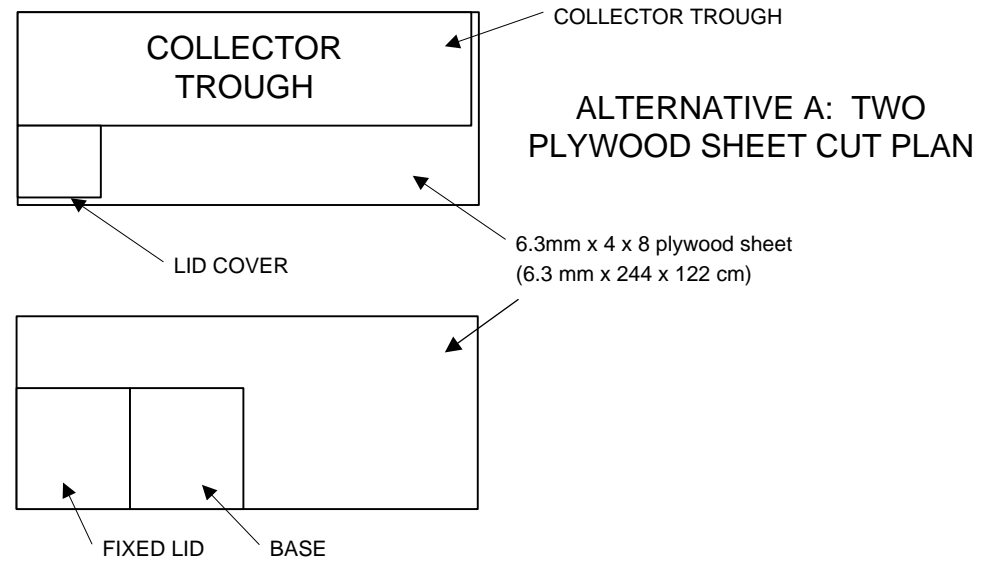
ADDING PLASTIC

Images were taken by the author at three construction locations in Nicaragua, June 2016.



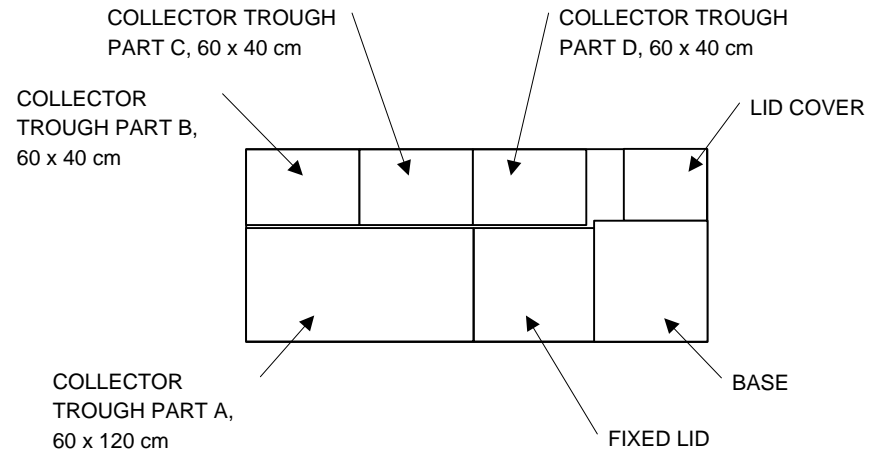
TITLE		DESCRIPTION	
SOLAR DEHYDRATOR		CONSTRUCTION IMAGES	
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WOOD MATERIALS		
ITEM	QTY.	DESCRIPTION
1	17	1 X 4 X 60 cm board (19 x 89 x 600 mm) trays & collector
2	2	1 X 8 X 80 cm board (19 x 184 x 800 mm) for base
3	2	1 X 8 X 60 cm board (19 x 184 x 600 mm) for base
4	2	1 x 8 x 2.4 m board (19 x 184 x 2,440 mm), collector
5	4	2 X 4 X TBD board (38 x 89 x TBD mm) base legs
6	2	2 x 4 x 17 cm board (38 x 89 x 170 mm) for base
7	2	2 x 4 x TBD board (38 x 89 x TBD mm) collector legs
8	1	6.3 mm x 60 x 64 cm plywood board for base
9	1	6.3 mm x 60 x 240 cm plywood board for collector
10	1	6.3 mm x 64 x 60 cm plywood board for fixed lid
11	1	6.3 mm x 44 x 38 cm plywood board for sliding lid cover



**ALTERNATIVE B: SINGLE PLYWOOD SHEET CUT PLAN**

OTHER MATERIALS		
ITEM	QTY.	DESCRIPTION
1	4	Mesh screen (cut to size, approximately 60 x 64 cm) for trays
2	1	Mesh to cover air intake (approx 12 x 60 cm) for collector
3	1	Mesh screen (cut to size, approximately 40 x 40 cm) for lid
4	960 cm	Foam strip (cut to size), self-adhesive or other, for trays
5	TBD	Duct tape or other material to seal joints in base
6	4	58 x 235 cm metal lath or screen, painted black
7	Roll	Reflective insulation, approx. 1 x 2.5 m, trim to fit collector
8	1	U.V. stable 6-mil plastic sheet (approx. 0.6 x 2.5 m), collector
9	TBD	Nails, 6 d or similar for trays, base and other, about ½ lb.
10	TBD	Nails, 2 d or similar for plywood, about ¼ lb.
11	10	Nails, roofing or similar with wide head, for lid
12	TBD	Staples tacks or brads to fasten mesh screen & foam
13	4	Metal lath or screen 58 x 235 cm, painted black

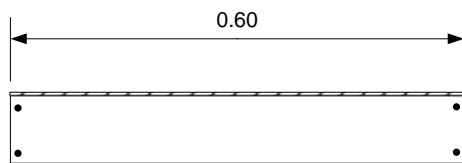


**NOTE: COLLECTOR TROUGH BASE CUT IN FOUR SEPARATE PIECES (A TO D SHOWN) AND ASSEMBLED TO 60 X 240 mm**

The cut & supplies sheet lists suggested materials needed for the project. Substitutions are encouraged based on cost, availability and imagination.

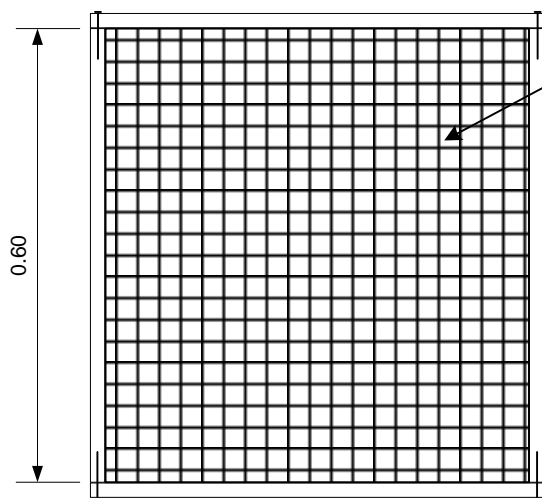
TITLE		DESCRIPTION	
SOLAR DEHYDRATOR		CUT & SUPPLIES SHEET	
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MATERIALS		
ITEM	QTY.	DESCRIPTION
1	16	1 X 4 X 60 cm board (19 x 89 x 600 mm)
2	24	Nails, 6d or similar
3	4	Mesh screen (cut to size, approximately 60 x 64 cm)
4	960 cm	Foam strip (cut to size), self-adhesive or other
5	TBD	Staples tacks or brads to fasten mesh screen & foam



SIDE VIEW  
mesh not shown

Fasten foam strip to boards around top edge. Foam seals leaks between dryer trays when stacked.



PLAN VIEW

Stretch mesh screen snugly across boards, fasten with staples or similar. Mesh supports food in tray. Note: fold mesh double under fasteners for more secure attachment.

Dehydrator trays are stacked on the base and hold product during the dehydration process.



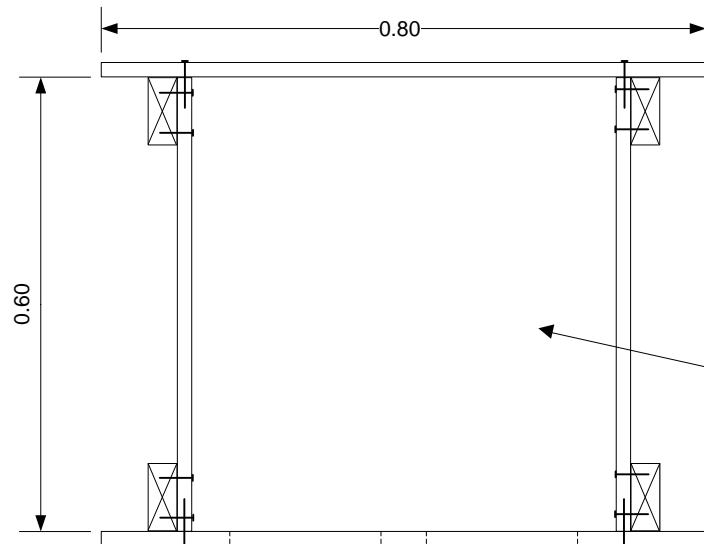
TITLE		DESCRIPTION	
SOLAR DEHYDRATOR		DRYER TRAY	
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Extend legs 0.32 m above base horizontal board to help retain dryer trays.

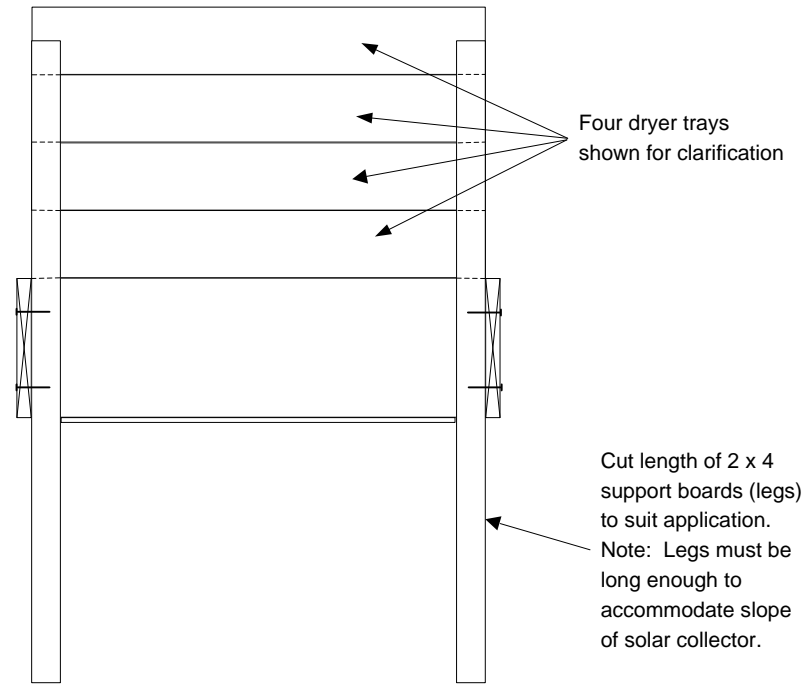
Cut two, approx. 20 x 10 cm holes to permit air from solar collector to enter the dehydrator base.

Nail plywood board to bottom of base (nails not shown).

SIDE VIEWS



PLAN VIEW



Four dryer trays shown for clarification

Cut length of 2 x 4 support boards (legs) to suit application. Note: Legs must be long enough to accommodate slope of solar collector.

MATERIALS		
ITEM	QTY.	DESCRIPTION
1	2	1 X 8 X 80 cm board (19 x 184 x 800 mm)
2	2	1 X 8 X 60 cm board (19 x 184 x 600 mm)
3	4	2 X 4 X TBD cm board (38 x 89 x TBD mm)
4	1	6.3 mm x 60 x 64 cm plywood board
5	TBD	Nails, 2d or similar
6	TBD	Duct tape or other sealant for joints

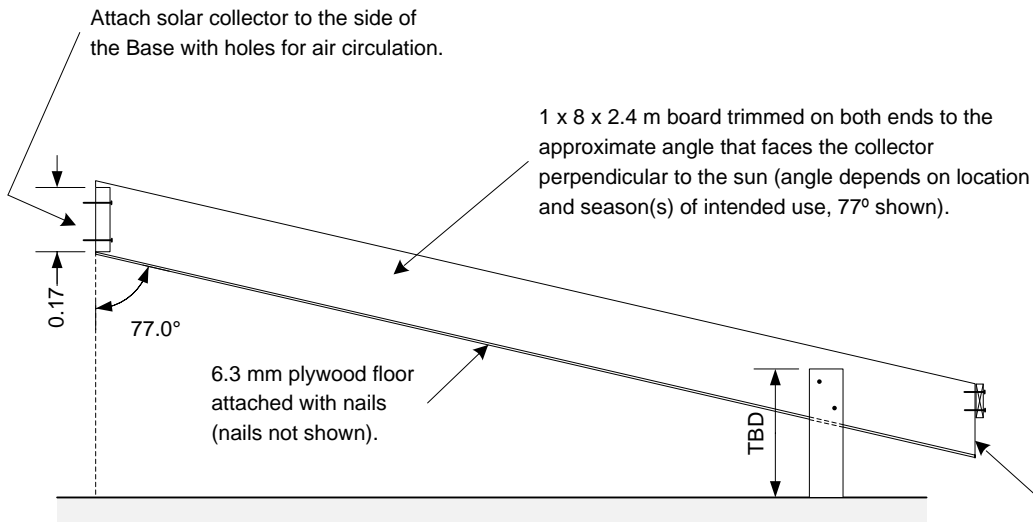
Use duct tape, caulk or similar to make seams and joints of dehydrator base air-tight

Dehydrator base supports trays and solar collector.

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SOLAR DEHYDRATOR		DEHYDRATOR BASE	
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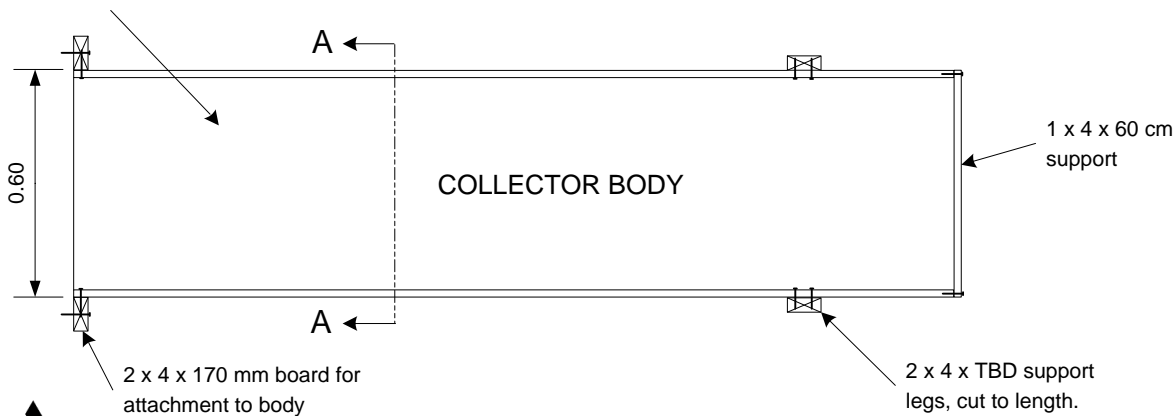
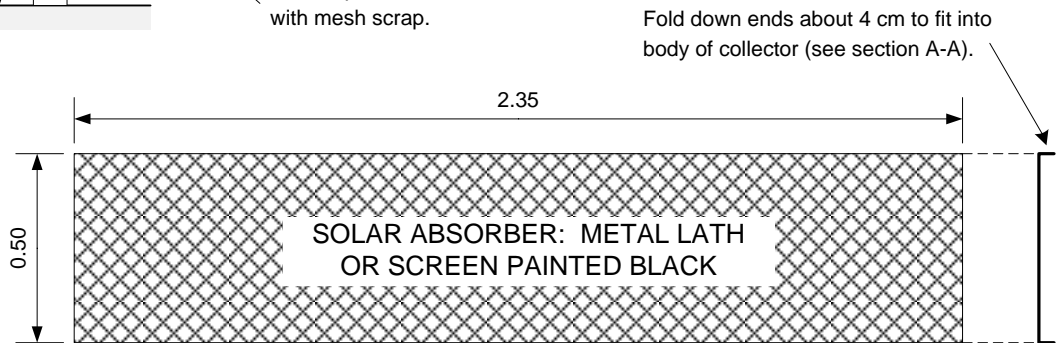
MATERIALS		
ITEM	QTY.	DESCRIPTION
1	2	1 x 8 x 2.4 m board (19 x 184 x 2,440 mm)
2	2	2 x 4 x 17 cm board (38 x 89 x 170 mm)
3	2	2 x 4 x TBD board (38 x 89 x TBD mm)
4	1	6.3 mm x 60 x 240 cm plywood board
5	4	Metal lath or screen 58 x 235 cm, painted black
6	Roll	Reflective insulation, approximately 1 x 2.5 m
7	TBD	Nails, 6d and 2d or similar
8	TBD	Staples or similar fasteners for plastic sheeting
9	1	U.V. stable 6 mil plastic sheeting (approx 0.6 x 2.5 m)
10	1	Mesh to cover air intake (approx 12 x 60 cm)



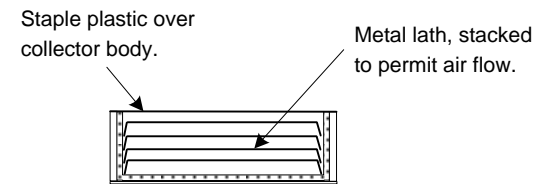
SIDE VIEW

Note: metal lath, plastic and insulation not shown on side and plan views

Line body of collector with reflective insulation attached with staples.



PLAN VIEW



SECTION A-A

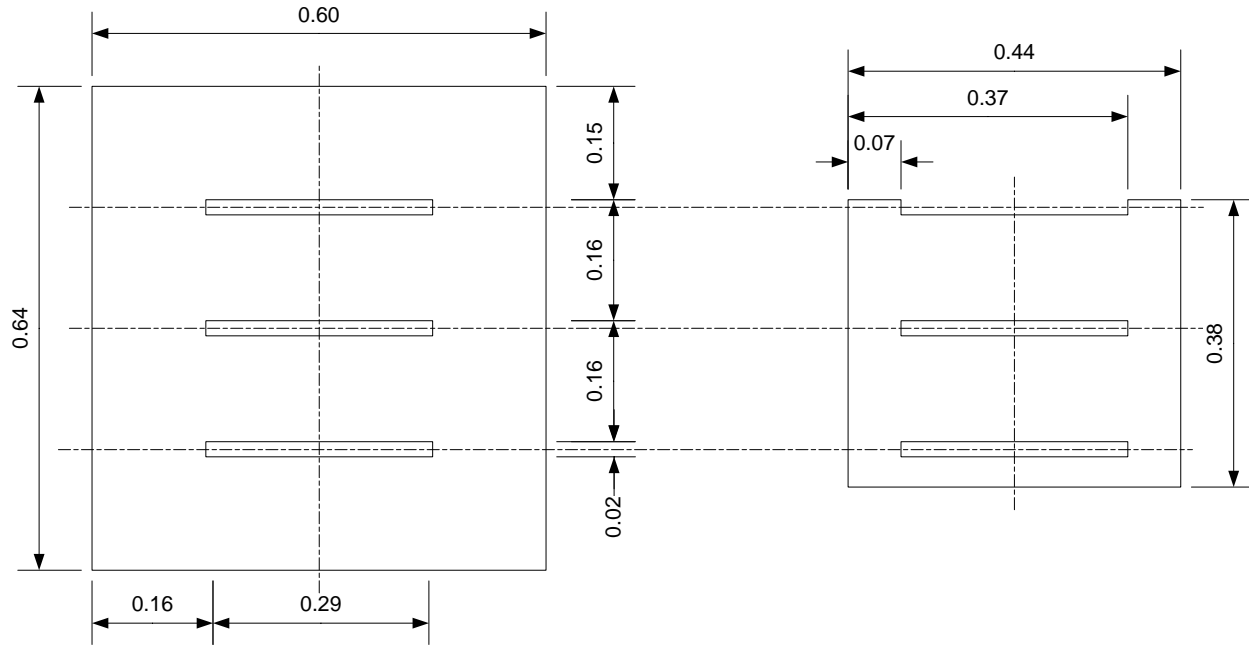
Solar collector warms air with sunlight and transfers warm air to dehydrator.

TITLE		DESCRIPTION	
SOLAR DEHYDRATOR		SOLAR COLLECTOR	
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MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	6.3 mm x 64 x 60 cm plywood board
2	1	6.3 mm x 44 x 38 cm plywood board
3	1	Mesh screen (cut to size, approximately 40 x 40 cm)
4	10	Roofing nails, or similar, to retain sliding cover
5	TBD	Staples or similar fastener for mesh screen



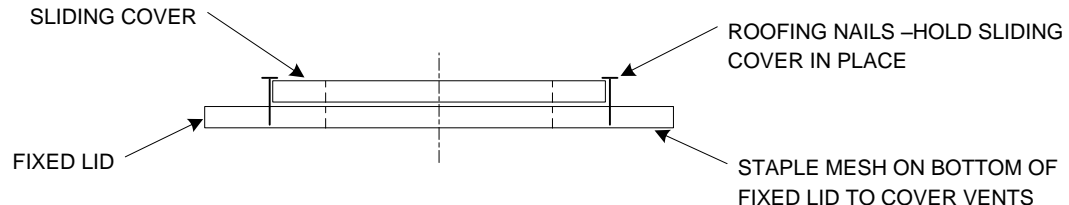
FIXED LID WITH VENTS

SLIDING VENT COVER

↑  
DIRECTION OF  
MOVEMENT OF  
SLIDING COVER  
↓

Set vent opening size using a thermometer to measure air temperature. Typical air temperatures do not exceed 57 °C.

PLAN VIEWS



ASSEMBLED END VIEW

Lid covers dehydrator and permits control of air flow.

NOTE: BOARD THICKNESS NOT TO SCALE, MESH NOT SHOWN

TITLE		DESCRIPTION	
SOLAR DEHYDRATOR		LID WITH VENTS	
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