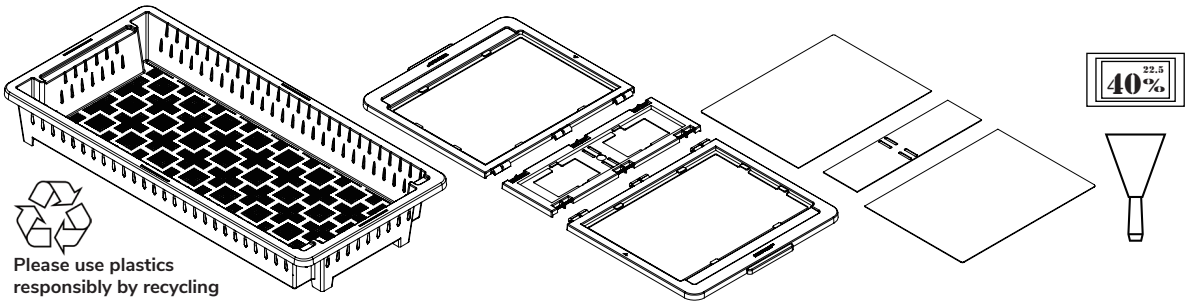
# DEHYTRAY™

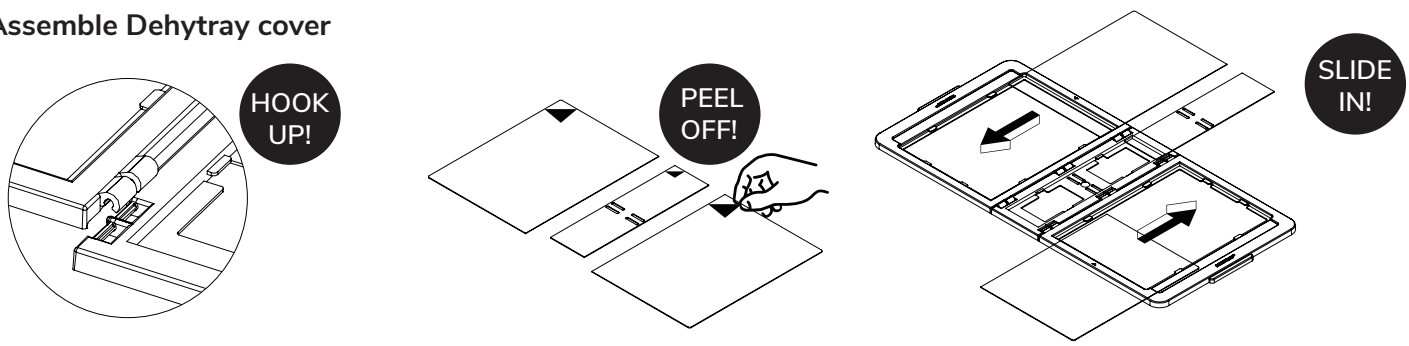
## Your Dehytray

1. Tray
2. Center vent cover & side cover
3. 3 acrylic sheets
4. Hygrometer /Thermometer
5. Scrapper

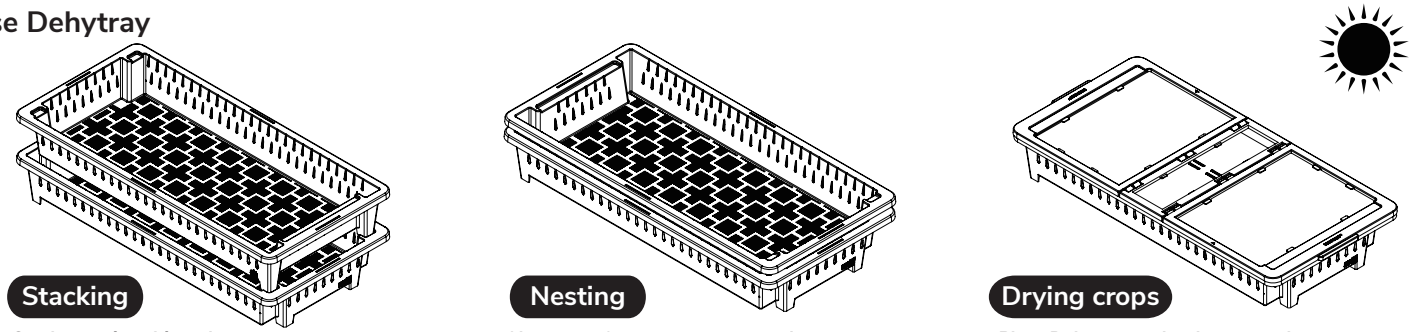



Please use plastics responsibly by recycling

## Assemble Dehytray cover




## Use Dehytray



**Stacking**

Stack trays in cabinet dryers

**Nesting**

Nest trays for easy transport and storage

**Drying crops**

Place Dehytray under the sun to dry crops

## Using Dehytray

**Where to set-up the DEHYTRAY?**

For best results and rapid drying, set-up the DEHYTRAY outside in the sun. You can elevate on a frame, place on a rock or concrete pad, set on a deck, rooftop or balcony

**When do I open the vent?**

Open the vent all the way at the beginning of drying.

**What would be the temperature inside the DEHYTRAY?**

The DEHYTRAY temperature would be twice the ambient temperature on a sunny day. For example, if the ambient temperature is 70°F (21°C), the DEHYTRAY temperature will be about 140°F (42°C).

**Can I leave DEHYTRAY outside overnight?**

For home use, it's best to bring it inside. You can leave in a greenhouse or barn. Always have the cover on and vent open when you have crops or foods inside.

**How do I clean the DEHYTRAY?**

Clean all the parts using clean water, sponge or brush with a little dish detergent. Rinse with clean water, hose down. Dry under the sun after washing or cleaning.

## When to stop drying

Your DEHYTRAY was supplied with a simple hygrometer to measure water activity (not product moisture) and a food grade scrapper/stirrer to remove sticky product or stir granular product when drying.

Follow these steps to determine when to stop drying your product:

**1.** Place about two tablespoon scoops of the product you are drying in a Ziploc bag or small transparent jar with the hygrometer that came with your unit as shown.

**2.** Expel as much air from the bag as possible and seal air-tight. If using a jar, put as much product as you have so you only have little air space for the hygrometer.

**3.** Wait for 15 minutes to check the humidity on the hygrometer. If the hygrometer reads:

- 60% and above, keep drying
- Below 60%, product is dry for safe storage

Note that the lower the humidity level, the drier the product. So you can use the humidity level measured as a quality control to maintain uniform product dryness.

## Tips to achieve a premium dried product

***Dry products on sunny warm days. Crops and products typically take from 24 h to 7 days to dry depending on the prevailing weather conditions.

***Always have the cover on the tray to achieve maximum drying temperature within the tray.

***To dry fruits optimally**, slice in thin slices or dice into small squares and dry in a thin layer.

***Consider pretreatment by dipping in dilute ascorbic or lemon solution to control negative enzymatic activity. In some cases like with tomato, sprinkle salt lightly on the cut size of the fruit. Cut side face up in the tray.

***To dry vegetables optimally**, blanch by dipping in hot water and cooling in ice. Vegetables can be dried in multiple layers, but fill tray no more than ¾ its volume and stir every 1- 2 hours.

***To dry granular products like grain or seeds optimally**, fill the tray up to half and cover lid to dry.

***Leave vents open when drying products.

***Check product say ever hour at the onset of drying and 2 or 3 hours after that to determine the progress of drying.

***Do not leave the DEHYTRAY in the rain. Take indoors should it rain. Take indoors during the night.

*Do not leave the hygrometer inside the DEHYTRAY during drying otherwise the unit would be damaged.

# DEHYTRAY™ Drying Capacity Table

| Crop Type | Initial Moisture | Wet Weight in DEHYTRAY™ | | Final Moisture | Dry Weight in DEHYTRAY™ | |
|---|---|---|---|---|---|---|
| | (% Wet Basis) | kg | lb | (% Wet Basis) | kg | lb |
| **Apples** | 85.6 | 2.20 | 4.84 | 6.0 | 0.34 | 0.74 |
| **Blueberries** | 92.1 | 2.20 | 4.84 | 8.0 | 0.25 | 0.55 |
| **Chili Pepper** | 82.0 | 2.64 | 5.81 | 10.0 | 0.53 | 1.16 |
| **Garlic** | 66.3 | 1.41 | 3.10 | 8.0 | 0.52 | 1.13 |
| **Ginger** | 90.0 | 3.08 | 6.78 | 11.0 | 0.35 | 0.76 |
| **Mint** | 87.9 | 0.88 | 1.94 | 9.0 | 0.12 | 0.26 |
| **Mushrooms** | 85.8 | 2.20 | 4.84 | 8.0 | 0.34 | 0.75 |
| **Tomatoes** | 96.0 | 2.42 | 5.33 | 11.0 | 0.11 | 0.24 |
| **Papaya** | 88.7 | 3.48 | 7.65 | 5.5 | 0.53 | 1.17 |
| **Shelled corn** | 30.0 | 4.50 | 9.90 | 13.0 | 3.62 | 7.97 |
| **Okra** | 95.0 | 1.50 | 3.30 | 15.0 | 0.09 | 0.19 |

**Note: 1 kg = 1000 g = 2.2 lb**

## How to use the DEHYTRAY™ drying capacity table

- The drying capacity of crops using the DEHYTRAY™ provided in the table are estimates based on thin-layer drying studies, and in some cases the capacity are estimates determined from studies using the DEHYTRAY™. Note that crop variety could influence the final capacity and so treat these estimates as ballpark estimates.
- Crops such as fresh fruit and vegetables should be dried in thin slices or chopped in chunks and spread to dry in thin-layers. The smaller the chunk or thinner the slice, the faster the rate of drying.
- The table should be interpreted as follows: about 2.2 kg (4.84 lb) of fresh apples will obtain 0.34 kg (0.74 lb) of dried apples.
- To determine the number of DEHYTRAY™'s that is needed to dry fresh fruit or vegetables to yield a given quantity of dried fruit or vegetables, follow these steps:

    - Step 1: First determine the quantity of fresh produce to yield a given quantity of dried crop using this formula: (Dried weight desired, kg or lb /Dried weight per DEHYTRAY*) × Wet weight per DEHYTRAY*. *Obtain values from the table.
    - Step 2: Determine the number of DEHYTRAYS to dry that quantity of fresh produce. This amount is not what you actually need to have, but the quantity of DEHYTRAYS you would need to achieve the dry yield in one batch.
    - Step 3: Using the number of days to dry a batch and the DEHYTRAY numbers you need to achieve your total dried yield per batch, you will be able to determine the DEHYTRAYS needed for your operation.

      • Example 1: How many DEHYTRAYS will be needed to achieve 1000 kg dried apples in one week if it takes 3 days to dry apples to safe storage moisture. Solution: (1000/0.34*) × 2.2* = 6,471 kg fresh apples. Number of DEHYTRAYS needed is 6471/2.2 = 2,941 DEHYTRAYS if drying will be achieved in one batch. Since 500 kg dried applies can be obtained in 3 days and only 1000 kg is needed per week, it will take 2 batches of drying. Therefore, 2,941/2 = 1,470 DEHYTRAYS. Should 1000 kg dried apples be needed per 2 weeks, then 2,941/4 = 735 DEHYTRAYS will be needed, achieving a yield of 250 kg dried apples per batch.

      • Example 2: Another way to determine the number of DEHYTRAYS needed is based on the quantities of crop harvested per day during the harvest/drying season. How many DEHYTRAYS will be needed if a farm harvests 2 t (2,000 kg) okra per day and it takes 2 days for okra to dry to safe moisture during this period. To dry 2,000 kg okra daily, 2000/1.5* = 1,334 DEHYTRAYS per batch. On day 2, the okra would have shrunk to half or less of its volume. Half of the trays would be free to use for a new batch after consolidating partially dried material into half of the DEHYTRAYS to keep drying. So the capacity needed to achieve daily harvest rate is 1.5 times the number of trays needed to dry the daily farm harvest, that is 1.5 × 1334 = 2001 DEHYTRAYS.

- While the final moisture content of the crop is indicated in the table, we advise that drying crops/foods to a water activity below 0.60 (aw< 0.60) or Equilibrium Relative Humidity, ERH < 60% should be used as the indicator to determine when crop or food has been dried to a safe moisture that would prevent deterioration by molds. A simple mini hygrometer device comes with the DEHYTRAY™ for use in determining when crop or foods has been sufficiently dried. You can stop drying when the meter reads before 60%. You can use this meter for quality control when drying batches to ensure uniformity of texture of dried products
- Drying duration is not indicated because they would vary from place to place depending on the weather and geographic location where the DEHYTRAY™ is used. Hot dry weather favor rapid solar (sun) drying than cold humid weather. Do not attempt to dry on cool humid and raining days.
- In general, the ambient temperature is doubled within the DEHYTRAY™ by the absorbed heat radiating from the tray walls. For example, if the ambient temperature is 25°C (77°F), the temperature inside the DEHYTRAY would be 50°C (154°F).
- Because the temperature is doubled inside the DEHYTRAY™, the humidity inside the tray decreases, thus creating a better drying environment than in open-air ambient sun drying.
- The vents in the DEHYTRAY™ should be opened to release humid air and prevent condensation. Opening the vent will also cause the temperature to decrease slightly by about 5°C (41°F).
- In some cases, fruit flies would enter the DEHYTRAY from the bottom and not be able to exit. If this happens, open the DEHYTRAY covers to release the flies and close back immediately. As the crop or product dries, they are less bothered by fruit flies. Covering the DEHYTRAYS using a net, could be helpful to prevent fruit flies.