

ENTHEOGENESIS AUSTRALIS

Coke bottle tek: A terrarium technique

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A coke bottle terrarium.

The coke bottle terrarium technique, or 'coke bottle tek', is a new application of existing methods using plastic bottles for raising cacti and succulents from seed. Many people are already using plastic-bottle-propagators of all shapes and designs to cultivate their herbs and trees, but most people don't expect cacti or succulents to grow very well in a humid terrarium. Many are surprised to learn that young, delicate cacti thrive in this type of environment.



Variiegated hybrid Trichocereus sp. grown using coke bottle tek.

Coke bottle tek is a modification of the famous 'take-away tek' that was popularised on The Corroboree forum in the early noughties. Coke bottle tek itself is a refinement of a decades-old method for raising cactus seeds in a closed plastic container. The basic principles are the same. Coke bottle tek is a set-and-forget technique, but strategic use of plastic bottles offers some additional advantages for the contemporary cactus and succulent propagator.

Overall, seedlings enjoy better protections in the coke bottle tek than in the take-away tek, reducing the likelihood of something going 'wrong'. Coke bottle tek can be left for longer periods of time, allowing plants to become more established, better preparing them for outdoor, in-ground environments. This eliminates or at least reduces the need for up-potting, a task that is often daunting in larger-scale operations. Coke bottle tek also represents a more recyclable and environmentally friendly alternative to take-away tek.

This technique has demonstrated incredible resilience to fungal issues, waterlogging and outside environmental fluctuations.



Coke bottle terrariums are their own microecosystems.

Preliminary experiments have produced outstanding results for cacti and there are surely many innovative ways with which coke bottle tek could be tweaked for the benefit of a particular plant or environment. Possible soil and fertiliser regimes are as variable as the plants grown.



Recently germinated *Hylocereus* sp. seeds.



Gymnocalycium saglionus, *Ferocactus latispinus* and hybrid *Ariocarpus* sp. grown using coke bottle tek.

We have heard reports of this technique being used to cultivate cacti including *Trichocereus* sp., *Lophophora* sp., *Hylocereus* sp., *Gymnocalycium* sp., *Astrophytum* sp., *Ariocarpus* sp., *Ferocactus* sp., and of course many different trees and herbs.

Why choose coke bottle tek over take-away tek?

1. Increased space above soil level. Coke bottle tek provides plants over 20 cm to grow above soil, while take-away tek provides only a couple of centimetres. The additional space allows plants to grow much taller than in flat-shaped take-away containers, benefiting from a more dynamic and favourable precipitation cycle. The taller shaft of a bottle terrarium also allows excess heat to be drawn above and away from seedlings, providing added protection from heat exposure.

2. Increased soil depth. The depth of growing medium increases from ~4-5 cm in the take-away tek, to about 13 cm in coke bottle tek. This enables plants to be kept for a longer time in the terrarium and grown to a larger size, if desired. The lid can be easily removed or replaced at any time, while rapid growth can be maintained in the bottles for a number of years (depending on crowding), due to a deeper soil level.



Too many seeds were sown in this terrarium. Crowding occurred as the plants grew, so the side of the terrarium was sliced away to provide more room. Crowding increases chances of infection and complicates up-potting.

3. Pre-set reservoir depth for wicking. Holes made in the side of the base of the coke bottle tek terrarium regulate the depth of the water reservoir, from which water is wicked into the potting medium. The take-away tek requires no holes to be made for overflow, instead, the right amount of water must be added at the beginning, based on a fairly subjective assessment. This assessment risks seeds rotting from too much water, or desiccation from not enough. Coke bottle tek allows water to be wicked up from the reservoir below and is maintained at the desired, predetermined level by the placement of the holes pierced in the side (not the bottom!) of the base of the terrarium. In both take-away and coke bottle teks, the water reservoir is replenished through an ongoing condensation and precipitation cycle, much like any terrarium.

To set the water level in coke bottle tek, one simply pierces holes through the bottom of the terrarium a short distance above the base. Water is gently applied to the growing medium until the water starts to overflow through these pierced holes. It should be noted that coke bottle tek can go multiple years without going dry and is also easily

replenished with water without removing the lid, as rain and other moisture is able to seep past the underlapping lid of the terrarium, and enter the 'contained' system, with any excess water automatically flowing out of the side holes. This helps ensure ample water without the risk of flooding the plants within.

4. Access and recyclability. While take-away containers are easily available, they have a limited life span. When subjected to light for long periods or handled without the utmost care, take-away containers fracture and break. Because of this fragility, it is often impossible to reuse take-away tek containers. Plastic bottles are much sturdier, reusable and easier to access without adding to our plastic waste problem. Many people collect plastic bottles to earn money by recycling them. Connecting with bottle recyclers is an affordable means of sourcing bottles for coke bottle tek and is likely more environmentally friendly than purchasing new plastic products.

Disadvantages of bottle tek include the need to select appropriate bottles and develop proper cutting technique, the inability of bottles to tessellate and their need for support due to a lack of balance, particularly with older, top-heavy plants. Packing terrariums into a box can help provide stability, portability and insulation.



Four bottles for two terrariums. Coke and similar bottles are suitable due to their double flange shape. When cut correctly, this flange allows bottles to lock into one another. Plastic bottles without a flange enjoy many benefits of a bottle terrarium, however these cannot be picked up via their lid. Some plastic bottles, such as bottles used for milk, perish more readily with age.

Equipment

Two identical, double flanged, PET plastic bottles
Soil or growing medium
Mulch or wood-based potting mix
Scissors
Metal skewer, knife or other sharp poking implement
Seeds
Spray bottle
Rinsed sand or zeolite (optional)

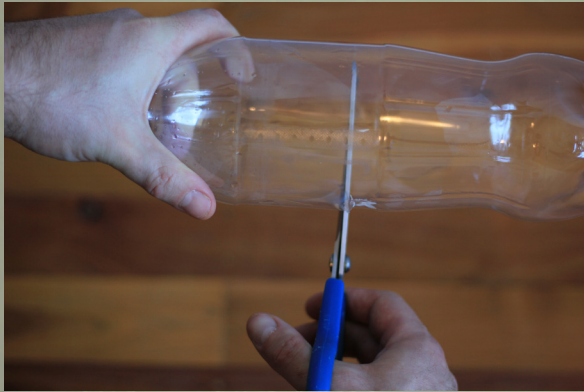
Method

1. Use your scissors to cut the labels off the bottles. Discard the labels.
2. Pierce small 2-4 mm drainage holes ~4-5 cm above each indent at the bottom of one bottle (5 holes total).



While it is possible to place no drainage holes in a bottle terrarium, such construction has resulted in submerged seedlings after periods of heavy rainfall, due to the outside water source entering through the underlapping lid. In take-away tek the lid overlaps, eliminating the risk of any such flooding.

3. Pierce the bottle used in the previous step ~9 cm from the top (just above the top flange).
4. Pierce the other bottle ~12.5 cm from the bottom (just above the bottom flange).
5. Cut around each bottle in line with the piercings you made in steps 3 and 4. When cutting a bottle, cut the lower side of the bottle using the top blade of the scissors, rotating the bottle with your other hand to keep your cutting hand stationary.



Effective hand placement for cutting terrarium bottles.

The two bottom pieces you have cut should interlock, be airtight and hold together when lifted by the top bottle piece. The lip of the lid should be underlapping the lip of the base.



Your two terrarium halves should look like this.



When cut correctly, the interlocking flange should be capable of bearing the weight of a planted terrarium.



Interlocking terrarium flanges with underlapping lid.

- Place mulch or wood-based potting mix in the bottom of the bottle so it fills to just above the drainage holes, aiding the wicking effect.



Using mulch or wood-based potting mix in the aquarium reservoir produces a wicking effect.

- Fill the plastic bottle with your growing medium to 12-15 cm from the base. Rinse deeply to saturate the potting mix and fill the reservoir, in preparation for sowing.
- Place a top layer (~1 cm) of rinsed sand or zeolite on your growing medium if you have some. This provides an additional barrier to infection.
- Place seeds on the top layer of your growing medium.
- Thoroughly spray seeds with water.
- Attach the terrarium lid by inserting the lip of the smaller bottle half inside the lip of the bottle you just filled with water.
- Place under shade cloth, filtered lighting or other appropriate light source. Use of a box is recommended for multiple terrariums.



Maturing hybrid Trichocereus sp. in boxes with terrarium lids removed



Coke bottle tek under artificial lighting.

Glossary

Flange.	Protruding ridge, lip or rim.
Terrarium.	Sealed transparent container for cultivating plants.
Up-potting.	Moving plants to larger pots.
Tek.	Technique.

Disclaimer

This document cannot cover all information regarding this diverse area of study. This document is only a starting point and should be used in conjunction with other evidence concerning ethnobotanical plants, fungi and related compounds.

Ethnobotanicals have risks and benefits and should always be treated with caution and respect. Some practices and ideas associated with the use of ethnobotanicals are embedded in cultural and religious traditions.

Research, due diligence, and caution are essential. Ensure to understand local laws, traditions, and sustainability before working with any ethnobotanicals.

Who we are

Entheogenesis Australis (EGA) is a charitable, educational organisation established in 2004. We provide opportunities for critical thinking and knowledge sharing on ethnobotanical plants, fungi, nature and sustainability.

We also encourage gardening and the conservation of plants, fungi and seeds that have a traditional relationship with humankind. We aim to celebrate culture, science, art, politics, and community around medicine plants through our conferences, workshops and resources.

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