

Mini-rhizobox assembly instructions

This document contains diagrams to aid assembly of a mini-rhizobox. This mini-rhizobox is a container for soil and a growing root system which is visible due one side of the rhizobox being transparent. The parts required are shown in Table 1, the equipment required in Table 2 and assembly is shown in figures 1-6. As mini-rhizoboxes are similar to the full sized rhizoboxes, only general assembly is shown here. For details on soil preparation, seed preparation and seed planting see file 'Rhizobox assembly instructions'.

Safety

This document suggests the use of adhesives. Follow all safety instructions which is provided or appropriate for any equipment used. Appropriate personal protective equipment should be used at all times such as gloves, eye protection etc. Glass can be damaged and contain sharp edges. Glass should be handled with care using gloves and any broken glass should be disposed of appropriately.

Table 1

Part	Properties	Example part source, country
PVC sheet	30 x 23 x 0.3cm	Direct Plastics, UK
Silicon strip	30 x 1 x 0.6cm (x2)	Silex Silicones, UK
Glass sheet	150 x 45 x 0.3cm	Alba Glass & Glazing, UK
Silicon u-section	30cm long, internal width 1cm (x3)	Silex Silicones, UK

Table 2

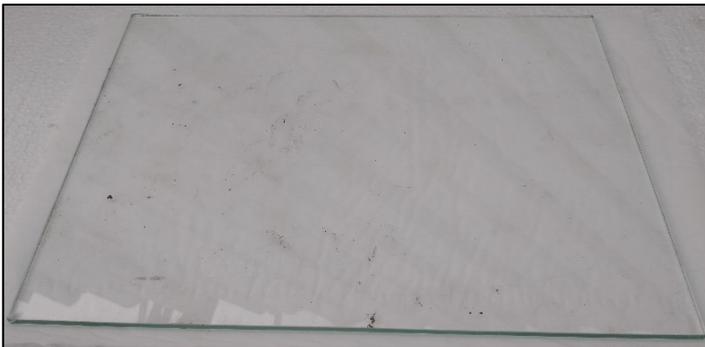
Equipment	Properties
Rolling pin	Plastic, approx. 5cm diameter, 35cm long
Silicon sealant or grab adhesive	Appropriate for PVC & silicon, waterproof
Box	Plastic, size to fit several rhizoboxes

1



Silicon strips should be glue to the PVC sheet. A silicone sealant or grab adhesive works well for this and, ideally, gluing should be done a few days before the rhizobox is to be used to allow the glue to dry.

2



All items should be clean before being used to make a rhizobox, however, the glass sheet is particularly important especially if it has been used before. Clean glass helps to improve the visibility of the roots. A weak detergent is usually sufficient but a solvent may be required for stubborn stains on glass.

3



Prepared soil should be weighed and spread evenly across the PVC. The amount used depends on the soil type and bulk density required. After spreading, the soil should be compressed using a rolling pin (plastic cylinder).

4



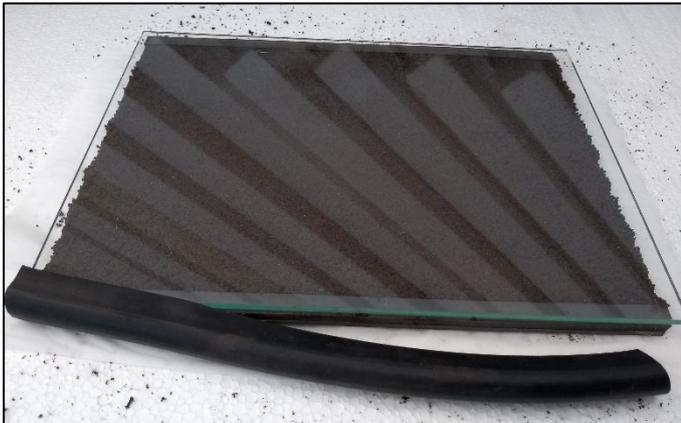
Any gaps in the soil should be filled with soil and compressed. This should be repeated until the rhizobox is filled and the soil is even.

5



The glass is then placed on top of the soil.

6



The silicon u-sections are added to the two sides of the mini-rhizobox (a section on the bottom is optional but can help prevent soil loss and damage to the glass).

Tips

- The mini rhizotrons should be kept in a box at an angle with the glass side facing downwards. They can be kept at various angles, however, for general growth we would suggest 45° as this maximises visibility of the roots. Water can be put in the box to maintain the soil moisture if necessary.



- The top of the rhizoboxes can be sealed with a piece of tape to stop the soil drying if necessary.



- Remember to label the rhizoboxes – this can be done on the PVC back sheet.
- The design of the rhizoboxes is simple and so they can be altered in many ways depending on the experimental requirements e.g.
 - A thicker silicone strip could be used to increase the space between the PVC and glass faces of the rhizobox therefore increasing the soil volume.
 - The size/shape of the glass and PVC sheets could be changed to match the shape of a root system and so minimise unused soil space or root growth becoming restricted.
- As the mini-rhizoboxes are simple and quick to set-up they can be very useful for early growth experiments or to trial experiments before using the full sized rhizoboxes.