



WATERBOXX



PLANTING INSTRUCTIONS



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Introduction

The Groasis Waterboxx is a unique planting device that enables plants to grow in harsh circumstances. The design of the Waterboxx ensures a steady water supply and stable temperatures in dry or eroded areas. Vulnerable saplings and seeds are protected and nurtured by the Waterboxx, giving them the foothold to survive on their own.

These are instructions for planting with a Waterboxx. Please follow these instructions carefully for optimum results.



Requisites for planting

Planting with a Waterboxx will require some tools and preparation. We advise you to prepare the following equipment:

Tools:

- Digging equipment (shovel, scoop or pickaxe)

Remember that you will need to dig a hole of a reasonable size. We do not advise planting with a Waterboxx if you are having physical problems (for example back problems or other injuries)

- A pruner or garden shears
- A box cutter or pocket knife
- A garden hose or buckets (for watering the plants and/or soil)

Time:

Planting a Waterboxx requires patience. Some of the steps in this manual involve a waiting period. Please remember that nature has its own agenda and that it will not be rushed.

Planting 10 Waterboxxes will take an experienced planter about 3 hours spread over two days. Inevitably, planting your first Waterboxx will take more time due to lack of experience with the procedure. Take your time to get acquainted with the procedure and your planting time will decrease rapidly.



Waterboxx parts

Your Waterboxx needs to be assembled from the following parts:

	<p>Lid: You can easily recognize the lid by its light color and wavy surface. It is designed to optimize water flow into the box and inspired by Lotus leaves.</p>
	<p>Mid plate: The mid plate is placed inside the Waterboxx to prevent algae growth and evaporation. It prevents sunlight from entering the Waterboxx through its dark color.</p>
	<p>Box: This part of the Waterboxx is a water container as well as a protective case for the plant.</p>
	<p>Wick: The wick is a medium for water transportation from inside the Waterboxx to the ground.</p>



	<p>Evaporation cover: The cover is placed directly onto the ground to protect the young plants from dehydration.</p> <p>You can press one, two or three openings in the carton, depending on the number of saplings that you want to plant.</p>
	<p>Siphons and cap: The siphons prevent water from vaporizing but still allow water to enter the box.</p> <p>The cap closes the Waterboxx.</p>
	<p>Windprotectors (optional):</p> <p>Windprotectors enable you to fasten the Waterboxx to the ground with screws or nails.</p>

Are you missing any of these parts? Please contact your distributor. You will need all parts for the best results.



Step 1: Preparing the soil

The first step of planting with the Waterboxx is soil preparation. You can prepare your soil with or without fertilizer or compost.

Please note: The soil preparation should be executed 24 hours before the actual planting.

When should you consider the use of compost or fertilizer?

You may want to use compost or fertilizer on soil that is very poor or lacks water holding capacity, for example in loose sand. The fertilizer provides a source of nutrients for the plant and keeps the water from disappearing directly into deeper ground layers.

Make sure that the fertilizer you are using is suitable for your plants.



1.1 Preparing the soil with compost and/or fertilizer:

The following instructions are intended for planting a Waterboxx with fertilizer or compost. Instructions for planting without fertilizer can be found in section 1.2.

Step 1.1a: Digging a hole and filling it with compost and/or fertilizer

First clear the soil of its top layer. Remove any debris or plant material and start digging.

Dig a hole of about 50cm deep. Make sure not to disturb the ground beneath these 50cm in order to keep the capillary system intact (this natural system consists of numerous underground channels that direct water into the ground when it rains and direct water back up when it is dry).



Save the soil that you have dug up.

Pour compost or fertilizer into the hole. 20 liters should suffice for most plants. You can mix the compost with organic fertilizer if you think the soil is very poor.

Refill the remaining hole with the soil that you saved until you have a hole of 15cm deep. For optimum results, make sure that this hole is horizontally aligned. This will optimize water flow into the Waterboxx and provide young plants with the necessary shade during hot parts of the day.

Waterboxx planting instructions



Step 1.1b: Mixing the soil



Stir the soil and fertilizer/compost. You can use a shovel or a scoop.

Step 1.1c: Watering the compost-ground mixture

Pour water (4 buckets) into the hole. Use 20 liters if the soil is clayey or loamy. Use 40 liters when the ground is sandy or rocky. Give the ground 24 hours to absorb the water before you continue planting.



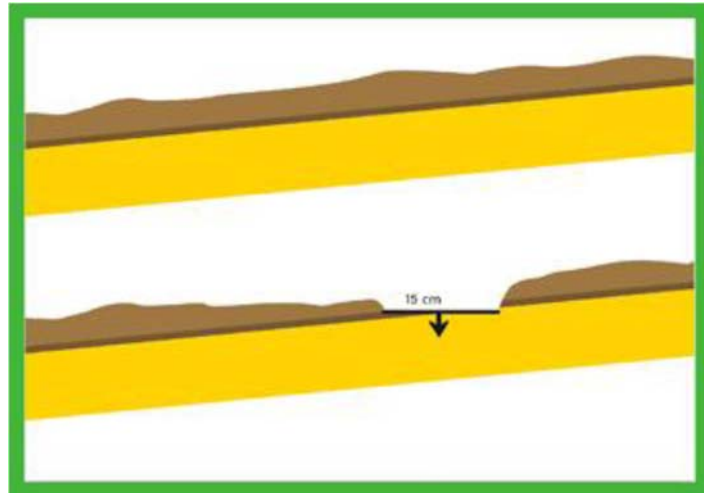


1.2 Preparing the soil without compost and/or fertilizer:

The following instructions are intended for planting a Waterboxx without compost or fertilizer. Instructions for planting with fertilizer can be found in section 1.1.

Step 1.2a: Digging a hole

The Waterboxx needs to be placed firmly into the ground. In order to do that, you need to dig a hole of approximately 15 cm deep and 60 cm in diameter.



First clear the ground of its top layer. Remove any debris or plant material and start digging.

If you are planting on slopes or uneven terrain, make sure that the hole is horizontally aligned. This will optimize water flow into the Waterboxx and provide young plants with the necessary shade during hot parts of the day.

Step 1.2b: Watering the soil



Waterboxx planting instructions



In order to prepare the soil for planting, you will need to add a sufficient amount of water. The amount of water varies from 20 liters for soil that easily holds water, to 40 liters for soil with a low water holding capacity.

Pour the water directly into the hole and wait for 24 hours before you continue planting.

Extra preparations to improve planting results:

Prevent root damage from grass

Grass that grows around the Waterboxx can threaten your sapling's survival, because it uses all the water that you give to the sapling. Make sure that you remove this grass to prevent grass roots from drinking all the water and destroying the wick.

You can prevent the growth of grass by loosening up the soil around the Waterboxx as shown below:



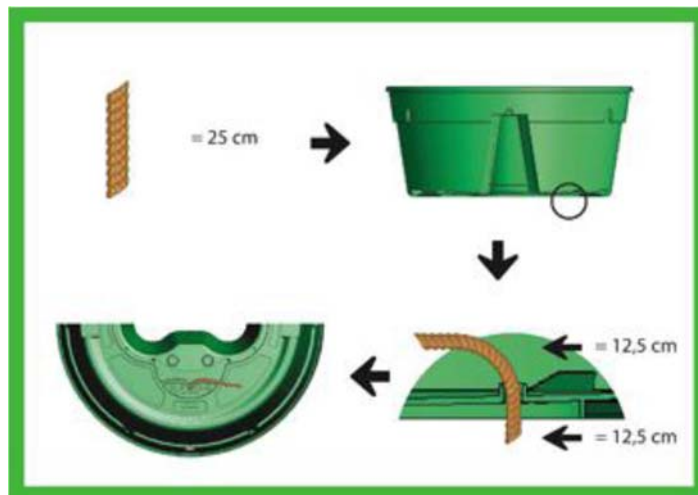


Step 2: Assembling the Waterboxx

Step 2a: Placing the wick

The first step in assembling the Waterboxx is the placement of the wick. The wick will transport water from the box to the soil.

First stick the wick through the hole in the bottom of the box. Then pull it halfway through.



Now look at the bottom of the box. You should see about 12 cm of wick sticking out.

Gently press this part of the wick into the designated slot. The wick should be directed towards the edge of the box and should be aligned with the large eight shaped hole.





Step 2b: Weighing the Waterboxx down (optional)

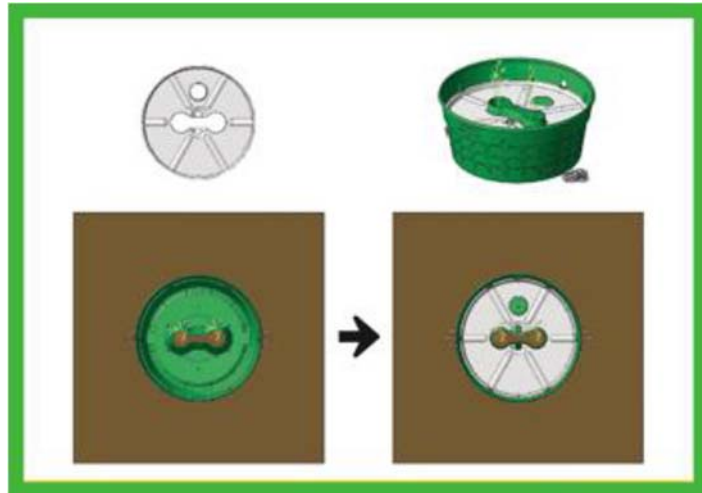
When you plant in areas that suffer from strong winds, avalanches or on steep slopes you may want to consider weighing down the Waterboxx. You can either weigh down the Waterboxx or fasten it with windprotectors. Instructions for the placement of windprotectors can be found in Step 5a.

The Waterboxx is made of polypropylene, which is a light material. You can weigh down the Waterboxx with stones or pebbles. Make sure that you use natural materials that do not rust. Ideally you can use stones from the planting environment.

Step 2c: Adding the mid plate

The next step in the Waterboxx assembly is adding the mid plate. This plate is placed inside the Waterboxx to prevent sunlight from coming in.

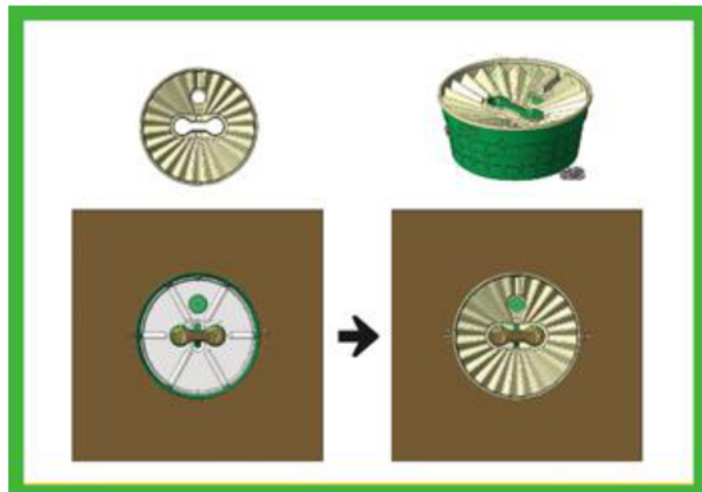
Turn the box after you have placed the wick. The mid plate should be placed inside the box and slide over the eight shaped projection. Make sure that the round watering hole is on the same side as the overflow in the Waterboxx (this should be facing north).



Step 2d: Placing the lid

The third step in the Waterboxx assembly is the placement of the lid. The lid will catch water and direct it into the box.

The holes in the lid should be aligned with the holes in the mid plate and the eight shaped hole in the Waterboxx.



You should be able to see the bottom of the Waterboxx through the round watering hole. When you are sure that the lid is placed in the right direction, you can fasten the lid by pressing it. Make sure that the lid is pressed tight, to prevent it from popping off. The lid should 'click' into place.

Waterboxx planting instructions



Check whether you can see the two tabs in the middle that keep the lid in place.



Step 2e: Placing the siphons

When the lid is secure, it is time to place the siphons.

Placing the siphons:

The siphons can be 'clicked' into place next to the eight shaped opening in the Waterboxx. Make sure that they do not protrude. Incorrect placement of the siphons will cause unnecessary evaporation of water.





Step 3: Preparing the plant

Plant preparation is an important part of the Waterboxx's success. It is also important that you understand what you are doing. This manual assumes that you are using a sapling that has grown in a pot or perhaps a tray with plugs.

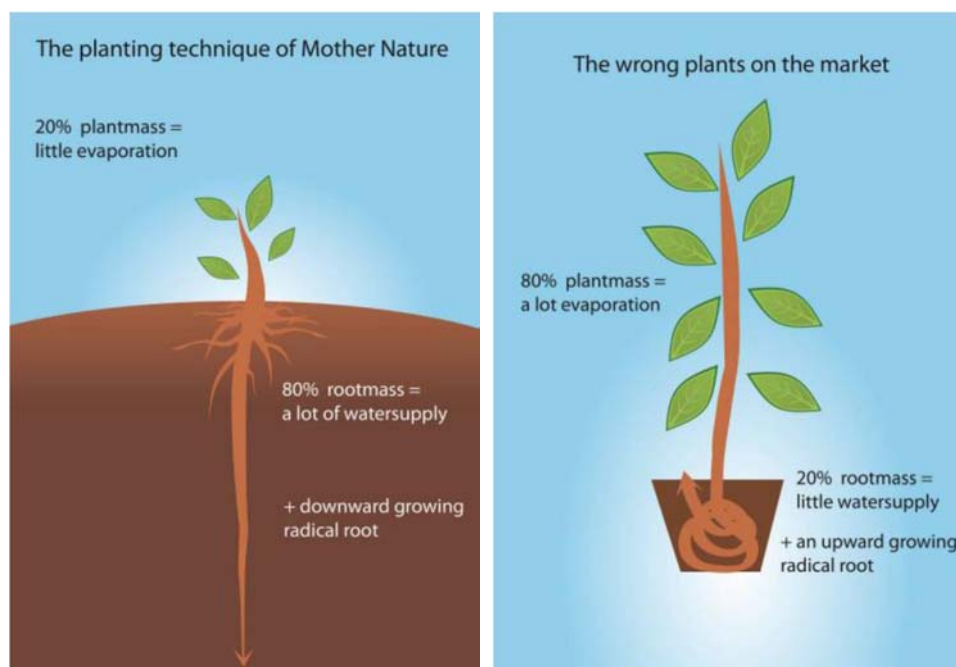
Step 3a: Theory

The roots of young plants have the extraordinary ability to penetrate soil, clay and even rock in their search for water. One type of root especially contributes to this quality: the primary root.

A plant has one primary root that grows vertically. Its main goal is to dig deep into the soil to find a permanent water source for the plant. Once the primary root has reached its goal, the plant stops digging further into the ground and develops secondary roots that explore the ground in a horizontal direction. The smaller roots are much less powerful and much less able to penetrate soil, let alone rock.

Plants that grow in an encased environment (a pot or plastic or another container) will soon reach the limit of their vertical growth and lose the ability to dig deep into the ground. That is why a previously potted plant will have a hard time growing in an environment that holds little water in higher ground layers. The primary roots of potted plants have either stopped growing vertically, or have started their way back up in search for ground water.

That is why many young saplings die when they are replanted. The area may have a sufficient water supply, but the plant is unable to reach deep enough to get to it.



Fortunately, there is a solution to this problem. When a primary root is pruned, it regains its vertical digging ability and starts over in its search for ground water. Part of the Waterboxx success is based on this principle. The Waterboxx gives saplings time to dig deep enough to reach ground water. But in order to have the plants digging again, you will need to cut off a part of the primary root. How to cut the primary roots will be explained in step 3b.



Step 3b: Preparing the roots of the plant

Compact the soil at the top of the container. Press gently with your thumbs to push the soil and plant downwards until they completely fill the bottom of the container.



Leave the plant in its container and use a box cutter or pocket knife to cut off about 3 cm from the bottom.



You have now removed a part of the primary root and reactivated the roots' vertical penetrating ability. Carefully cut the pot or plastic and remove it. The plant is now ready for planting.

For more info look at this video:

<http://www.youtube.com/watch?v=EXcw7BCOGaU&list=UUjI5jo9A8z3tmIhyX4Qf0GA&index=3>



Step 4: Planting

Step 4.1: Digging holes for the plants

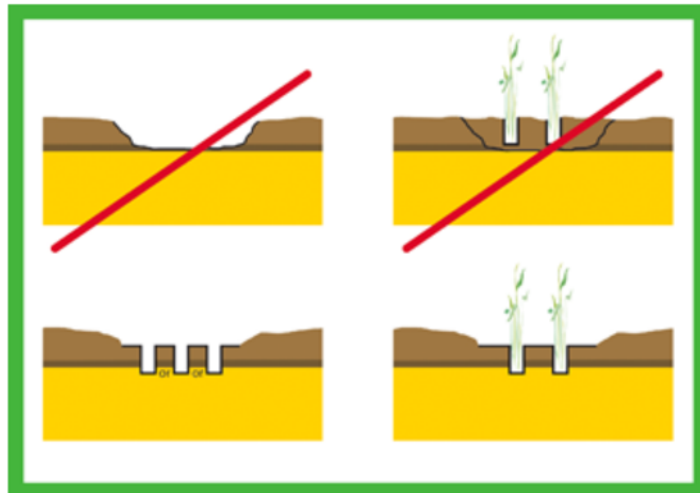
You will achieve the best results when you open up the soil before digging the planting holes. This will allow oxygen to enter the ground which benefits plant growth. Open up the ground and leave it for 1 to 3 hours.



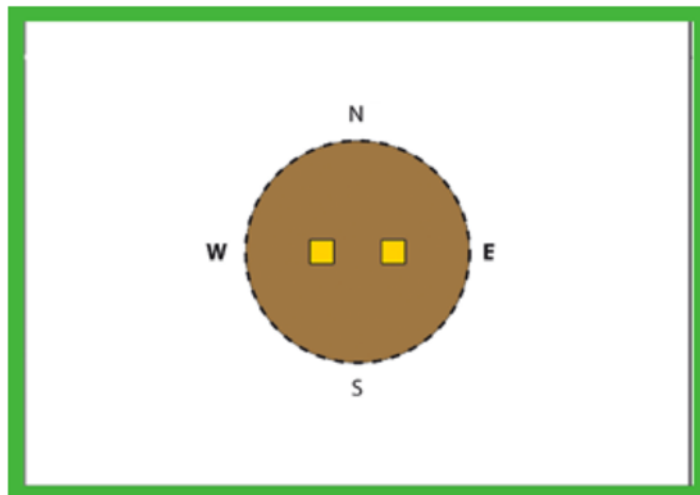
The plants need to be planted at the bottom of your Waterboxx hole. Separate planting holes are dug into the larger hole. The depth of the planting holes depends on the size and roots of the saplings that you are planting.

When digging the holes, make sure that you preserve the capillary system intact. For this reason, do not make the holes bigger or deeper than necessary.

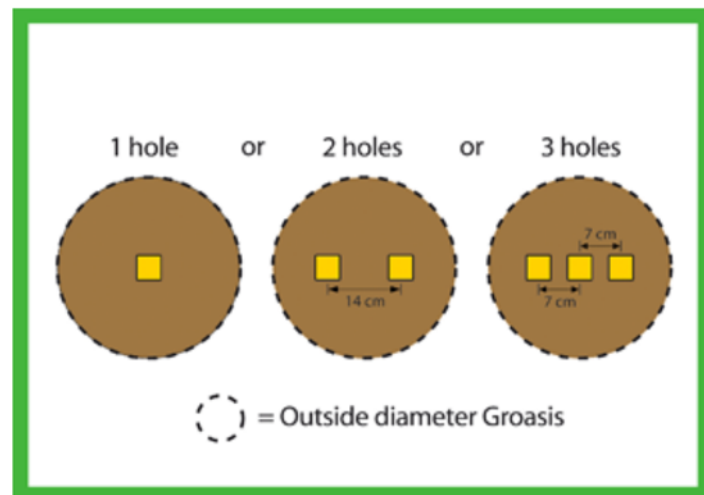
Waterboxx planting instructions



It is important that the planting holes are aligned from east to west. This way, young plants will be sheltered from the sun during the hottest parts of the day and enjoy sunshine when it is a bit cooler.



Two plants should be planted 14cm apart. If you are planting three plants, a space of 7cm between plants will suffice.



The easiest way to pinpoint the exact distance between planting holes is to use the evaporation cover and mark the ground as shown below:



Now dig the holes and place your saplings.

Note for compost/fertilizer users:

Planting holes should not penetrate your layer of compost or fertilizer to optimize the nutritional value for the plant. The roots of the plant should contact the compost/fertilizer.



Step 4.1: Planting and adding soil

When you have dug the holes, you can plant your saplings and cover them with a thin layer of previously dug up soil. Gently press the surface with your hands. Be careful not to press too hard. Do not use your foot or tools. The plant will be more firmly put after watering.



Step 4.2: Removing the side sprouts and remodeling the plant

To prevent evaporation through the leaves of the plant you should remove all side sprouts and prune the plant to a short single stem of 20 cm length.

Be careful not to damage the plant and use a sharp pruner. Do not rip or twist the sprouts.



You should end up with single stems (or a single stem) and you are now ready to place the Waterboxx.

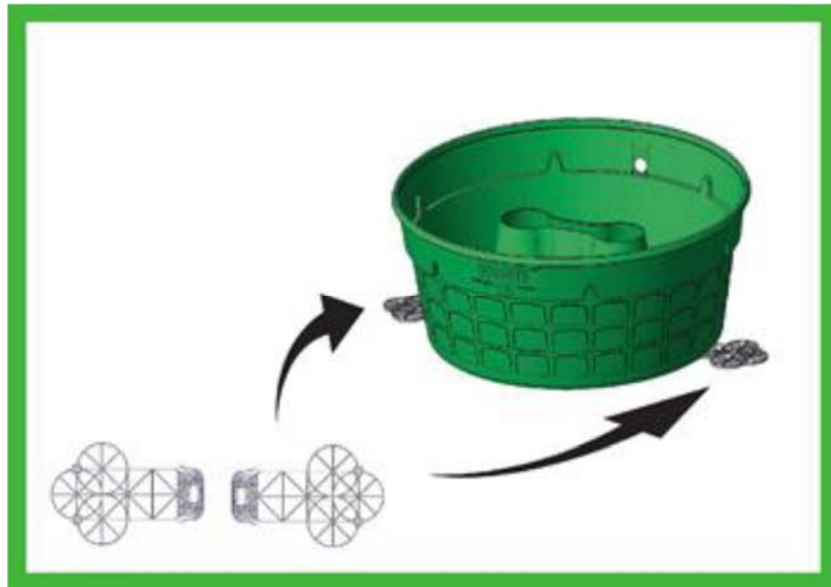


Step 5: Placing the Waterboxx

Step 5a: Placing the windprotectors (optional)

The windprotectors keep the Waterboxx firmly on the ground. In areas with strong winds or storm, you may want to consider this extra way of anchoring the Waterboxx. The windprotectors can also come in handy in rocky areas where digging is difficult or on steep slopes that suffer from water streams or snow avalanches.

Click the windprotectors in the slots at the bottom of the box as shown below:



Step 5b: Placing the Evaporation cover

First place the evaporation carton over the saplings.



Waterboxx planting instructions



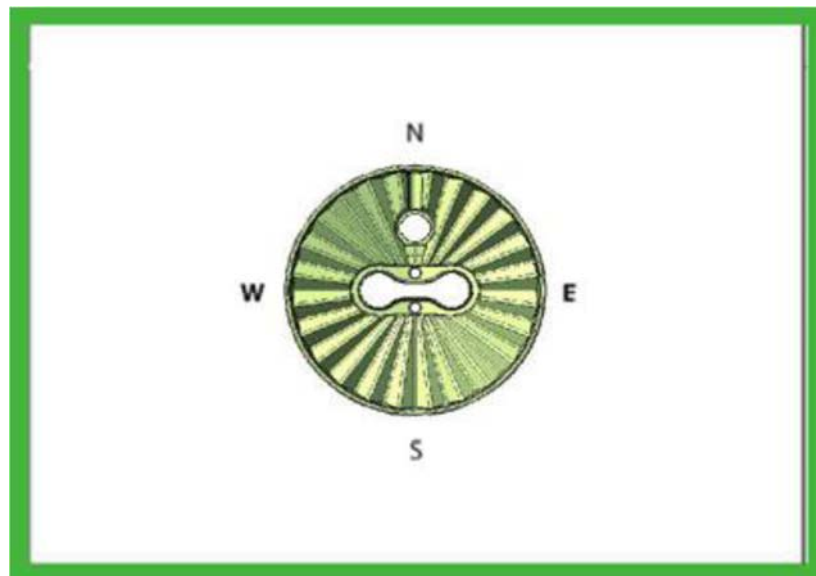
Then cover the carton with a pile of ground. You do not need to be thrifty. Form a small 'hill' of soil over the evaporation cover to ensure a tight fit between the Waterboxx and the soil.



Step 5c: Positioning the Waterboxx

It is important that the Waterboxx is placed in the correct direction. You have planted your saplings from east to west. The eight shaped hole in the Waterboxx must be aligned with the saplings. Make sure that the watering hole and the overflow are facing north.

You can use a compass to assess the proper direction. The Waterboxx has a helpful direction indicator on the lid that clearly shows the correct position.



Waterboxx planting instructions

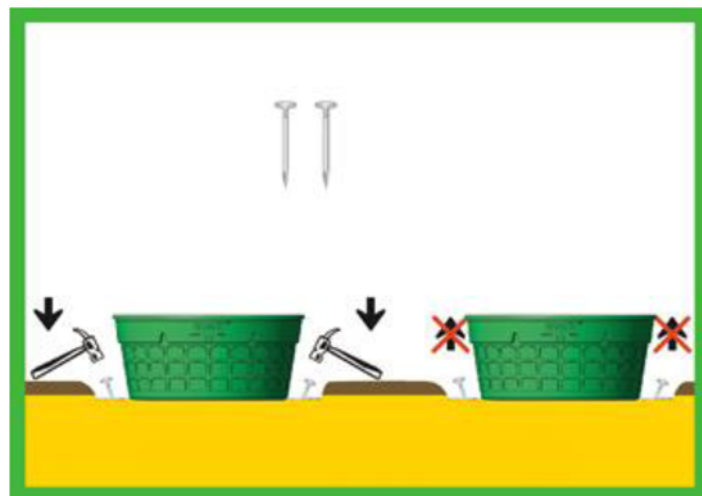


When the Waterboxx is placed correctly, pour a few scoops of sand or ground into the eight shaped hole. These scoops will close any cavities between the Waterboxx and the ground. Do not cover the saplings.



Optional for windprotector users:

Use nails or screws to fasten the windprotectors to the ground.



Step 5d: Partly burying the Waterboxx

The Waterboxx should be partly buried, leaving only the lid and a small part of the box exposed. Scoop sand or soil onto the sides of the Waterboxx, until you reach the overflow hole.

Waterboxx planting instructions



Your Waterboxx is now ready for watering.



Step 6: Watering the plants for the first time

After you have placed the Waterboxx it is time to water the plants and the box.

6a: Watering the plants:

Start watering the plants. Do not pour the water directly into the eight shaped hole. Instead you can pour water onto the lid, which will automatically distribute it to the plant. Pour approximately 4 liters (one gallon) of water onto the lid.

Caution: Watering the plants directly with high pressure can cause damage to the plant or wash away the soil in the eight shaped hole. Please use a low pressure water supply and water carefully.





6b: Filling the Waterboxx:

After watering the plants, we fill up the Waterboxx itself. The water will be held by the box which gradually distributes it to the ground. Pour 16 (four gallons) liters of water through the round watering hole in the Waterboxx.



When the Waterboxx is filled up, you can close the round hole with the cap.

Placing the cap:

The blue cap can be placed in the round watering hole in the lid. Place the cap into the hole and twist it shut.



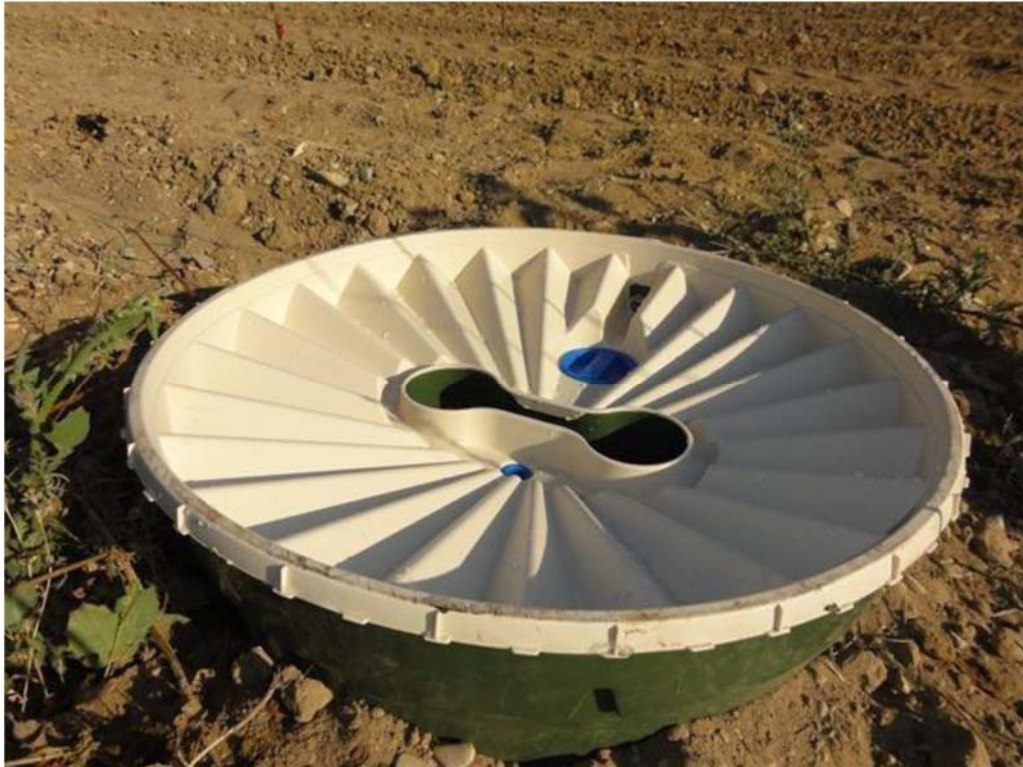


Quality specifications for saplings:

- (Northern hemisphere) Stem diameter on 10 cm height for planting period October until March: 5 mm
- (Northern hemisphere) Stem diameter on 10 cm height for planting period April until September: 8 mm
- (Southern hemisphere) Stem diameter on 10 cm height for planting period April until September: 5 mm
- (Southern hemisphere) Stem diameter on 10 cm height for planting period October until March: 8 mm
- Stem must be woody, cannot be 'fleshy'
- Maximum length of 20 cm is sufficient. If the plants are longer, we cut this part off
- Growth direction of the primary root must be vertically downwards
- Root color must be white
- Plants must have been hardened in the nursery during at least 2 months of growing in the full sun



Final checks



After you have planted the Waterboxx please check the following:

- Have you properly placed the evaporation cover?
- Have you properly attached the wick?
- Have you planted the Waterboxx deep enough? It should be placed 15cm into the ground. The overflow should still be exposed.
- Have you cleared the ground around the Waterboxx from grass and other plants?
- Is the cap tightly shut?
- Have you placed the siphons in the correct way? The siphons need to 'click' into position and should not protrude.
- Have you secured the lid? The lid should be firmly put to prevent it from popping off due to a change in temperature.

Have you answered all these questions with 'yes'?

Then you have successfully planted a Waterboxx. Congratulations!