



NFT

Instructions & Grow Guide

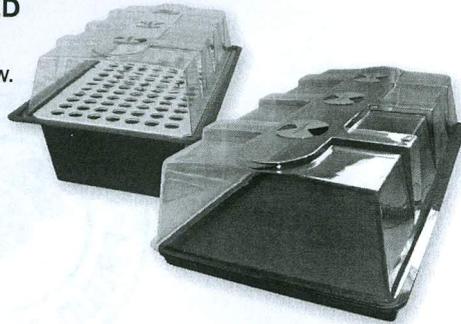
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Raising seeds and cuttings

RAISING TRANSPLANTS FROM SEED

Ensure your growing environment is good enough for the plants you are going to grow. This is easier if you use a propagator.



A. USING COMPOST

Germinate seed in a seed tray of compost.

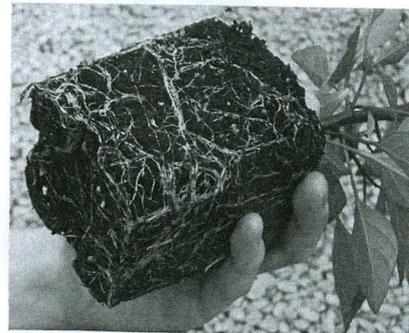
When seedlings are large enough to handle, transplant to a suitably sized plastic pot with drainage holes.

Or germinate seed in the correct sized pot.



Water as necessary. If your compost contains nutrient (check the label) use water only. If your compost doesn't contain nutrient use a complete hydroponic nutrient at half strength. If necessary adjust pH in the watering can. See page 7 for instructions.

Your plants are ready to be transplanted to your NFT system when you can remove the pot and the compost remains bound by the white roots of your transplants.



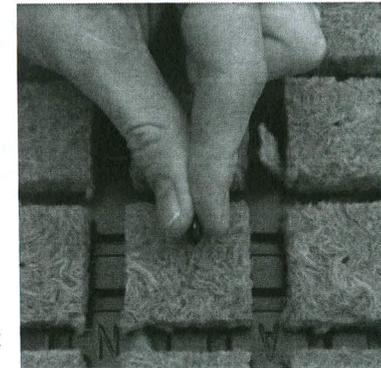
B. USING ROCKWOOL

We recommend Grodan rockwool.

Before using rockwool soak the rockwool overnight in water at pH 5.5 and allow to drain. This reduces the alkalinity of the rockwool.

Plant the seed in the rockwool cube. Gently bury and cover over the seed using a blunt instrument and allow to germinate.

When the seedling develops its first green leaf, begin to water sparingly with half-strength complete hydroponic nutrient. If necessary adjust pH in the watering can.



When the seedling has developed white roots to the outside of the rockwool it can be transplanted to a larger rockwool block which has been soaked in nutrient solution at pH 5.5 overnight and allowed to drain.

Keep seedlings watered with half strength hydroponic nutrient. Your plants are ready to be transplanted to your NFT system when you have lots of white roots on the outside of the large block.



C. USING AEROPONICS

Bring the seeds or cuttings on as directed by your propagator instructions.

Young plants can then either be transplanted to an alternative medium, e.g. rockwool, and grown on before transplanting to your system, or, grown on in the propagator until the roots reach 3 to 4 inches in length and transplanted directly into your NFT system.



RAISING TRANSPLANTS FROM CUTTINGS

Follow the instructions for raising from seed but DO NOT use nutrients in the water until your cutting has rooted.

Tip: For raising seedlings or cuttings, over-watering slows root growth dramatically. Always keep your plants slightly on the dry side.

Setting up the Gro-Tank

1. Place the Gro-Tank on a level surface. If placed on a bench ensure that the bench can support the weight of the Gro-Tank when full.



2. Place the channel onto the tank with the access opening at the same end as the solution max level indicators (the triangular ledges). Fix the tank and channel together with the plastic nuts and bolts provided. **Please note:** if you are using a GT205 or GN205 the channel rests on the tank so there is no need for nuts and bolts.

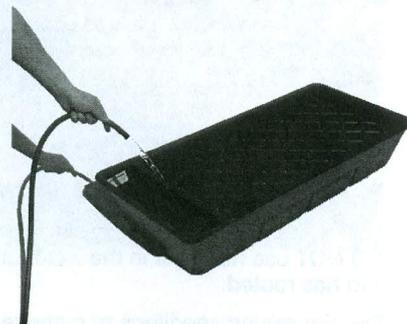


3. 24 hrs before transplanting fill the Gro-Tank with water to the solution level indicators. This allows the water temperature to rise to room temperature and for chlorine to escape from tap-water. If the water temperature is below 63°F (17°C) use a water heater to raise water temperature to 65°F (18°C).



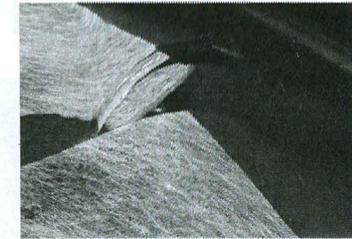
FOR 1M GRO-TANK & GT150 TURN TO PAGE 5

4. Push the wide end of the delivery tube into the pump outlet, then place the black air-line tube onto the outside of the impellor shaft.

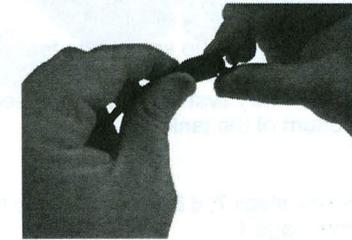


Please Note: Image shows an Oxy Pump, supplied with UK Systems only. A universal water pump is supplied for all other markets.

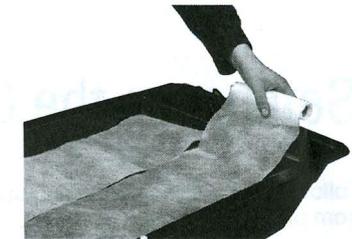
5. Place the pump in the tank and shake to remove any air bubbles. Next, fix the pump to the base of the tank using the rubber suckers. Put the narrow end of the delivery tube through the hole in the tray and place the black air-line and valve outside of the tank.



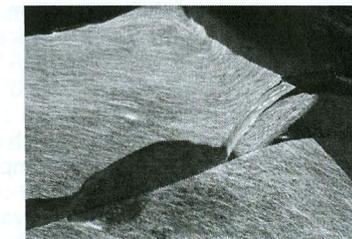
6. The valve can be adjusted by turning the top clockwise to close and anti clockwise to open. We recommend you use it fully opened.



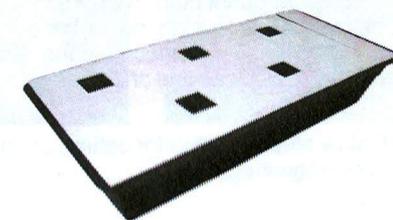
7. Place 1 layer of spreader mat onto the channel. The spreader mat will spread nutrient solution along the channel. Overhang the spreader mat slightly into the tank.



8. Connect the pump to the mains supply and switch on. Water should flow onto the channel, soaking the spreader mat. You may need to press the spreader mat onto the channel to ensure that it becomes soaked. If you need to adjust the flow rate of the pump, slide the vent on the side of the pump. Now turn off the pump until after you have transplanted your plants.



9. Cut holes in your top-plate where you want to place your plants. Plants grown in NFT like their roots to run together. If you have space train the stems away from each other. Put the top-plate in position so that the hinged cover is over the access opening. Use the adhesive pads to attach the long edge of the top-plate to the tank. If you are using a GT205 or GN205 simply place the top-plate on the channel. The example shows a GT424/GN424 system.



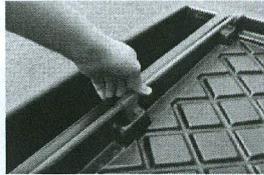
Setting up the 1m Gro-Tank

Follow steps 1, 2 & 3 for setting up the Gro-Tank from page 3 and then...

Place the delivery system through the hole in the channel making sure the holes are facing downwards.

Set the pump up so that the feet are fitted onto the longest side of the pump. Attach to the delivery system and fix the feet to the bottom of the tank.

Follow steps 7, 8 & 9 for setting up the Gro-Tank from page 4.



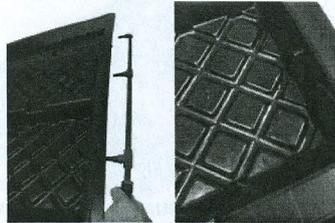
Setting up the GT150

Follow steps 1, 2 & 3 for setting up the Gro-Tank from page 3 and then...

To assemble your delivery system push the two long lengths into the loose tee piece. The GT150 delivery system is flexible enough to allow you to position the pump at either side of the reservoir. Turn the elbow connector on the delivery system 180 degrees depending on which side of the reservoir you will access the pump from. Push the delivery system through the holes in the channel so that the spouts are over the channel as shown.

Place the pump in the tank (at the same end as your elbow connector). Next, fix the pump to the base of the tank using the rubber suckers. Now attach the elbow connector to the pump and place the black air-line and valve outside the tank.

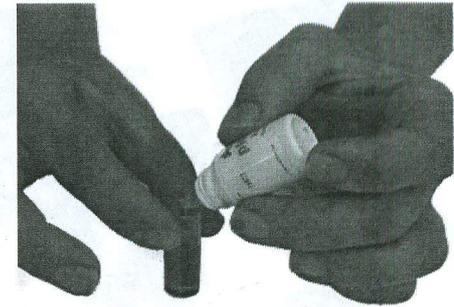
Follow steps 7, 8 & 9 for setting up the Gro-Tank from page 4.



Before planting out

10. Add nutrients according to the manufacturer's instructions (see back page for guidance on tank volumes).

Check pH (see page 7)



Planting into Gro-Tank

WHEN TO PLANT OUT

Do not plant into your NFT system until the plant is rootbound - your plant needs to have lots of white roots on the OUTSIDE of the compost or rockwool.

If white roots aren't on the outside of the growing medium when you place your plant into the Gro-Tank system the roots will become saturated with no access to oxygen and will die-back.

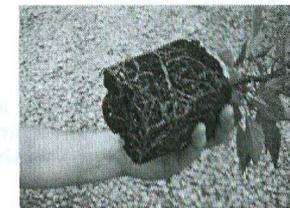
The plants pictured below are ready for your Gro-Tank system. DO NOT transplant until your plants are at this stage.



Rockwool propagation block



Aeroponic Cutting



Compost propagation block

Ongoing maintenance

MAINTAINING PH



Check pH levels in your tank weekly.

Decide the pH you want to maintain. We recommend between pH 5.8 and 6.5.

Test the pH of the nutrient solution in your tank using an approved test kit e.g. Nutriculture liquid pH test.

If the pH of the solution is in the correct range 5.8 – 6.5 do nothing.

If the pH of the solution is above the correct range add phosphoric acid (pH Down).

If the pH is below the correct range add potassium hydroxide (pH Up).

Add a very small amount of phosphoric acid or potassium hydroxide to a glass of warm water and stir well before adding it to the nutrient solution. Once in the solution stir well again, or leave for 75 minutes before retesting pH.

It is easy to overdose with pH Down and pH Up. It is more damaging to add too much pH Down or pH Up than for the solution not to be in the ideal range, so use the pH Down or pH Up very sparingly. Adjust pH to your chosen level over several days.

Take a note of the amount of phosphoric acid used to adjust your first tank of nutrient solution, it will make it easier when you need to do it at solution changes.

In soft water areas very little pH adjustment (if any) will be needed but in hard water areas the pH will rise gradually. Do not be tempted to add extra acid to compensate, simply adjust pH back down to preferred level.

Avoid large changes in pH and nutrient strength.

SAFETY FIRST

Phosphoric acid is strongly acidic and potassium hydroxide is strongly alkaline. Always follow the safety instructions on the container. Never mix phosphoric acid with potassium hydroxide. You should never need both materials on the same site.

Maintaining the solution

TOPPING UP THE SOLUTION

Add nutrients according to the manufacturer's instructions.

Do not let the solution level in your tank drop significantly. An Auto-top-up system will prevent this happening.



WITH AN EC METER

Top-up the Gro-Tank if needed with water only, wait one hour for new water to mix with old solution, then check EC reading. Add nutrients to bring EC level back to the target EC. Empty your tank at least once per month so you can start again with a fresh nutrient solution – this is called a 'solution change'.

WITHOUT AN EC METER

Top-up the Gro-Tank as needed with nutrient solution at half the strength of the nutrient you are currently using in the system. Empty your tank at least once per month so you can start again with a fresh nutrient solution – this is called a 'solution change'. Making up a container of half dose nutrient solution makes topping-up easier.



EMPTYING THE GRO-TANK

Switch the pump off. Remove the delivery tube from the channel inlet and fit the emptying tube onto the delivery tube to empty the Gro-Tank. We recommend that you remove as much solution as possible, you can use a sponge to soak up any solution that doesn't drain away. Used solution can be disposed of in the garden.

USING HEATERS - SUBMERSIBLE HEATERS/THERMOSTATS

Lay the heater on the base of the tank. Incline the heater by raising the cable and fixing it with a cable tie or clip.

UNDER-TANK HEATERS WITH SEPARATE THERMOSTATS

Follow your heating equipment instructions to connect the heater and thermostat. If you have one thermostat operating more than one heater fit the thermostat in the tank with the largest heater.



Key things to remember

1. Transplant when root bound.
2. Ensure atmospheric (air space) environment is suitable for the plant you intend to grow.
3. Follow nutrient instructions on nutrient label.
4. Maintain nutrient & pH levels.
5. Monitor & control pests and diseases.

The most common causes of poor growth

1. Plants placed in the channel too early – ensure that only rootbound plants are used.
2. Heavy handedness with acid - take care not to add too much.
3. Incorrect nutrient dose used - check manufacturer's instructions.

About roots

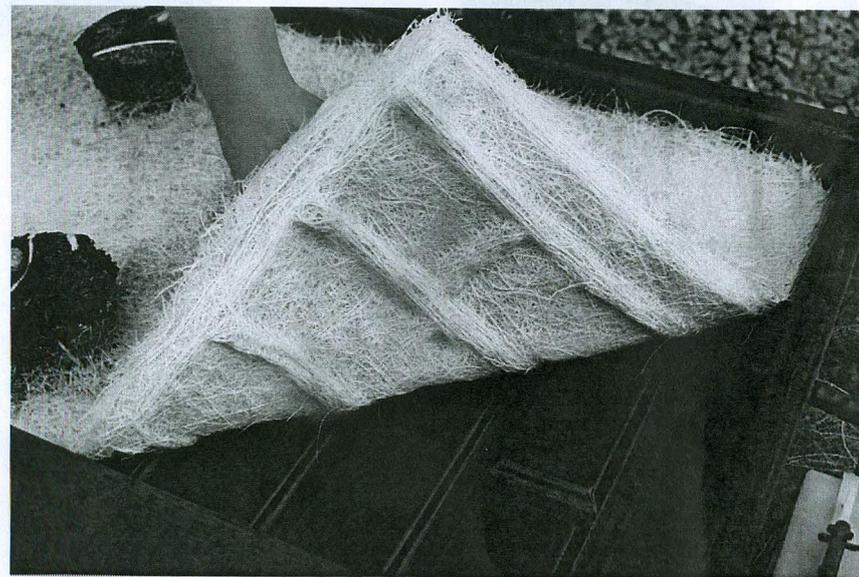
NFT is such an effective method of growing because it produces very healthy roots. There are three different root types;

1. PRIMARY ROOTS

These are the large diameter roots which first emerge and travel into the nutrient solution and which grow very rapidly.

2. SECONDARY ROOTS

These are smaller diameter roots emerging from the primary roots. The large surface area of these roots makes them vital for taking-up nutrients and water. Plants have a mechanism known as 'active uptake' which enables plants to determine what they want to take-up from what is provided. This is why NFT is so successful for growing plants.



3. ROOT HAIRS

These are vital to the health of your plants. Root hairs are the lungs of the plant. They take-up oxygen (as essential to plants as it is to humans), which is why your plants need to have root hairs above the solution level in the channel.



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